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ABSTRACT

This report, the third in a series of six, evaluates the 10 school districts that received grants from the California Department of Education to develop Level II Model Technology School (MTS) Projects intended to enhance instruction and student learning through a combination of curriculum improvement and integration of technology within a single comprehensive curriculum area across all grades at a single school site. Areas to be addressed by the projects included the curriculum, staff development, learning resources management, dissemination, and evaluation. Data were collected from each of the project sites through staff interviews; a self-assessment inventory; surveys of teacher and student reactions; dissemination assessment; adoption evaluation; and case studies. The report presents detailed findings for projects at 6 of the 11 projects schools: (1) Project FUTURE, a middle-school language arts/technology program at Crest View Elementary School in Huntington Beach; (2) Project TASC II, a life, physical and earth sciences program for students in grades 7 and 8 at Upland Junior High School; (3) Project LINKS, a literature-based integrated language arts program for students in grades K-6 at Laguna Road Elementary School in the Fullerton Elementary School District; (4) Project TOPS, a science program for students in grades K-6 at Skyline Elementary School in the South San Francisco Unified School District; (5) Project HAT, a history/social science project for students in grades 7 and 8 at Andrew Carnegie Middle School in the San Juan Unified School District; and (6) Project TIME, a history/social science project for students in grades 9-12 at Santa Barbara High School. Findings of site visits to the schools are also summarized. A summary of the

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findings for all six projects and recommendations conclude the report. The assessment instruments are appended. (AEF)

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Comprehensive Study of Educational Technology Programs Authorized from 1989-1992

Volume III

Level II Model Technology School Projects

December 20, 1991

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Comprehensive Study of Educational Technology Programs Authorized from 1989-1992

Volume III

Level II Model Technology School Projects

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Level II Model Technology School Projects
(Academic-Technology Model Projects)

Background From 1987 - 1989

I. Program Summary.

Ten school districts received grants from the California Department of Education (CDE) in April of 1987 to develop Level II Model Technology School (MTS) Projects. This program (also known as the Academic-Technology Model Projects) was funded to enhance instruction and student learning through a combination of curriculum improvement and integration of technology within a single comprehensive curriculum area across all grades at a single school site.

The initial grant period of 15 months (through June of 1988) and a second one-year grant was intended to provide the Level II projects with sufficient time to design and develop programs that would demonstrate the application of technology to meet the requirements of the state curriculum frameworks and Model Curriculum Standards, to prepare the staff development necessary to adopt or adapt the application, and to package the model program for dissemination throughout the state.

Legislative Authority. Assembly Bill 803 allowed several major initiatives to support state-wide reform efforts in curriculum and instruction. The CDE, upon advice of the Educational Technology Committee, secured approval of the State Board of Education (SBE) to initiate four types of direct support to local education agencies: the Adoption/Expansion Grants Program, the Developmental and Dissemination Grant Programs, and the Model Technology Schools Programs, Levels I and II. The MTS Level II Program was reauthorized under AB 1470 (the Farr-Morgan-Quackenbush Educational Technology Act of 1989). Six of the original 10 projects were funded to disseminate products and practices through June 30, 1991, and seven have been funded for the 1991-92 school year.

II. Program Planning

Program Goals and Objectives. The MTS Level II program was designed to address important questions about the long-term implications of the use of technology in schools including:

1. What policy changes and implementation strategies, given existing and emerging technologies, will hasten the integration of those technologies with other efforts to reform and improve curriculum and instruction?
2. What comprehensive training programs are needed to enable teachers, administrators and parents to use instructional technologies effectively?
3. How can technology improve both instruction and administration?
4. What hardware and software configurations produce the best instructional outcomes?
5. What budgetary resources will be needed to bring about these changes?
6. How can instructional technologies be used as a catalyst to improve school-community relations?

The program rationale was summarized in the CDE's Request for Proposals (RFP) which was distributed to 26 school districts selected after a preliminary screening of short proposals:

> *The State's priority for the use of [program] funds is first to improve curriculum which is in line with the State Department of Education's curriculum efforts, and second, to enhance student learning experiences through the use of technology and technology-based or delivered resources.*

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What is learned from the process of integration of technology in the various curriculum areas and the effect on student and staff performance will be included in products and materials for use by other schools in California.

The RFP noted that preference would be given to schools that had already "demonstrated significant improvement in the targeted curriculum area. . . not necessarily schools that are 'high achieving sites,' but rather schools" that:

- Have a goal, a plan, and a process for upgrading curriculum.
- Have demonstrated positive school, parent, and community relationships and demonstrate concern about school climate issues.
- Have a working relationship with district and regional support agencies to upgrade curriculum and implement higher academic achievement standards.
- Have an infrastructure of willing staff experienced in curriculum development and application of technology to instruction, who are prepared to take on new challenges.
- Have demonstrated progress in the use of technology in instruction and instructional support activities.

III. Program Description

Ten local education agencies received MTS Level II grants from fiscal year 1986-87 funds to establish Academic Technology Developmental Projects. Six of these projects are currently funded by AB 1470 to disseminate instructional strategies and materials that support the state curriculum frameworks and the use of technology in instructional settings. The projects serve as demonstration sites available to other California schools for visitation, materials acquisition, and staff development. The projects addressed five of the six major curriculum areas that were emphasized in the RFP (none focused on foreign languages). The curriculum areas, districts, school sites, and grade levels were as follows:

English-Language Arts		
Fullerton Elementary School District	Laguna Road Elementary	K-6
Ocean View Elementary School District	Crest View Elementary	7-8
Fine Arts		
Pleasant Valley Elementary School District	Pleasant Valley Elementary	K-8
History-Social Science		
Placentia Unified School District	Brookhaven Elementary	K-6
San Juan Unified School District	Andrew Carnegie Middle	7-8
Santa Barbara High School District	Santa Barbara High School	9-12
Mathematics		
Corona-Norco Unified School District	Parkridge Elementary	K-6
Science		
South San Francisco Unified School District	Skyline Elementary	K-6
Upland Unified School District	Upland Junior High School	7-8
Los Angeles Unified School District	Manual Arts High School	10-12

Program Emphases. Each of the MTS Level II projects were to address both state-wide CDE reform initiatives and locally determined objectives. The areas to be addressed by the projects included:

1. ***Curriculum.*** The MTS Level II projects were funded to develop applications of technology to improve instruction in a single curriculum area across several grade levels. The RFP for the program required applicants to provide evidence of recent local efforts in curriculum

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improvement and alignment with state curriculum reform efforts and to describe how the proposed project would continue to advance these improvements.

2. ***Staff Development***. Similarly, the MTS programs were expected to develop products and procedures that could be used in providing staff development activities for educators who adopted the model programs. The guidelines for applications to continue MTS Level II grant support for 1988-89 directed the projects to list and describe the products and processes that would be ready for publication or distribution by the end of the second grant period, (June 30, 1989), as an example for other schools that might be interested in implementing the model program.

3. ***Learning Resources Management***. While the CDE did not explicitly require the Level II MTS projects to demonstrate the improvement of learning resources management, all educational technology programs have subsequently been charged with the responsibility to coordinate their efforts with other agencies and programs to reduce duplication of effort and increase the efficiency of resource utilization. The MTS Level II projects have become state-wide resources and they coordinate their dissemination activities with other state-supported programs, such as the California Technology Project (CTP) and the California Subject Matter Projects.

4. ***Dissemination***. After two years of supporting the ten MTS Level II projects to develop exemplary instructional activities in specific subject areas, the CDE allocated AB 1470 funding for projects to emphasize packaging and disseminating promising products and processes to other schools. Six of the original projects were funded for dissemination for January 1990 through June 1991, and a seventh was added to operate from July 1991 through September 1992.

5. ***Evaluation***. The RFP for MTS Level II program grants in 1987-88 required applicant schools to propose an acceptable process and outcome evaluation plan and to describe how they planned to determine successful completion of project objectives. The RFP did not require any specific amount of effort, budget allocation, or standards for the assessment.

Program Reports. The guidelines for end-of-project reports that were given to the projects in the second year of activities required a much more comprehensive effort to evaluate the outcomes of each MTS Level II site. These requirements included:

A. A narrative description of the operations of the project providing details about:

- Major purpose(s) of the project and any changes since original grant application.
- Changes in student behavior and performance attributable to the project with indicated methods of assessment and methods suitable for potential adopters.
- Project activities, including reasons for any changes in planned activities, failures and successes, delays, unanticipated events, by-products, personnel availability, and extent to which implementation proceeded as planned.
- All curriculum changes and improvements, new materials, and new processes that exemplified the curriculum frameworks, utilized cooperative or collaborative learning strategies, and improved students' higher order thinking.
- Changes in materials, processes, and so forth, that were made as a result of the evaluation of the project outcomes.
- Learning environment(s) of the project, including those of the labs, etc.
- Characteristics of students who were participants in the program and identification of all populations benefited.

- Types of technology used and how each was used.
- Assessment of readiness for dissemination of products and processes.

B. A list of equipment purchased and/or received through donations to the project.

C. An expenditure report detailing amounts budgeted and subsequently spent according to major budget classifications.

IV. Program Implementation

Project Activities. Between September 1, 1987 and June 30, 1989 the MTS Level II projects implemented their plans to develop technology applications for the improvement of instruction in specific curriculum areas. Six of the ten projects, denoted with an asterisk (*) below, were later funded for dissemination activities when the program was reauthorized under AB 1470 and a seventh (**) was added in the 1991-92 school year. The projects and their products were as follows:

* **Project LINKS** (Laguna Road Elementary School: Fullerton Elementary School District). This literature-based integrated language arts program developed materials for students in grades K-6. All students read significant literary works in a variety of genres and write in responses to questions about the literature using personal experiences. The computer is used as a tool in writing and for publishing student work. Students use video equipment to broadcast live news and informative reports and participate in teleconferences.

* **Project FUTURE** (Crest View School: Ocean View Elementary School District). This language arts/technology program developed programs and activities for students in grades 7 and 8. Students were equally represented by Hispanic, Asian, and Caucasian populations, one-third of whom were limited-English proficient. A variety of technology applications are employed to enrich curriculum presentations, information resources, and student assessment activities.

Project CREATE (Pleasant Valley Elementary: Pleasant Valley Elementary School District). This fine arts program was developed to improve fine arts instruction for students in grades K-8. Technology was used to give teachers and students more choice and access to a wide array of performance and visual art work by providing tools to foster creative expression by "non-artists" and promoting improved work and self-evaluation.

Project TTT (Brookhaven Elementary School: Placentia Unified School District). This language arts and social studies program developed integrated curriculum units around themes for students in grades K-6. The staff development efforts focused on the conceptual approach to teaching social studies by emphasizing the link to literature.

* **Project HAT** (Andrew Carnegie Middle School: San Juan Unified School District). This history-social science project developed a variety of teaching strategies and model lessons to "make history come alive" for students in grades 7 and 8. Interactive laserdiscs, a networked computer laboratory, digitizer, VCR, camcorder, CD-ROM, ITV, and satellite programming were utilized to connect the past with the present.

* **Project TIME** (Santa Barbara High School: Santa Barbara High School District). This history-social science project developed a variety of teaching materials for students in grades 9-12. Video study guides and tests, spreadsheet templates, databases of test questions, and lessons employing interactive video, laserdiscs and hypercard stacks were used to enable students to assume "more direction for their learning."

* **Project TOPS** (Skyline Elementary School: South San Francisco Unified School District). This science program developed teaching methods and technologies to sequence school district curriculum and the *Science Curriculum Framework* for students in grades K-6. Taking maximum advantage of available technology, the lessons emphasized problem solving, science processes, and basic science concepts.

* **Project TASC II** (Upland Junior High School: Upland Unified School District). This instructional program in life, physical, and earth sciences developed materials for students in grades 7 and 8. Computers, laserdiscs, telecommunications, robotics, and videos were designed to provide students with interesting, hands-on exploratory experiences for "high impact intervention learning."

** **Project VIM** (Parkridge Elementary School: Corona-Norco Unified School District). This mathematics program was developed for students in grades 4, 5, and 6. Interactive videodiscs, instructional lessons in elementary mathematics, incorporating science laserdiscs is used to enhance the presentation of decimal numeration.

Project Science In-Sight II (Manual Arts High School: Los Angeles Unified School District). This project developed an interactive instructional video laserdisc with accompanying print and computer materials for tenth grade biology classes. Students with widely varied levels of academic and language proficiency were the target audience. The project uses technology as a means of increasing enjoyment of learning science concepts, language skills, and test-taking skills necessary for future success.

V. Resources to Support the MTS Level II Program

Support Factors. Eligibility for MTS Level II grants was limited by the CDE to 26 districts that had been screened in a preliminary round of proposals identifying schools with the potential to develop programs meeting criteria for teaching, curriculum, and instructional technology. In the second round of proposals, preference was given to schools, as described above, that had "demonstrated significant improvement in the targeted curriculum area" and which had "a goal and a plan and process for upgrading curriculum." These screening procedures increased the likelihood that the MTS Level II projects would be located in districts with the personnel competence, existing technology capabilities, and commitment of local resources necessary to support the development of model technology curriculum programs.

Adequacy of Resources. In the original RFP for the MTS Level II program, the CDE notified applicants that all of the "Academic Technology Development projects [were to] be program development grants and *not equipment grants*. All proposed equipment purchases [had to] be clearly and fully justified." This limitation increased the likelihood that grant funds and matching district resources would be dedicated to developmental activities rather than to the acquisition of hardware and software.

VI. Program Support, Resources and Constraints

1. ***Program Budget.*** The ten original MTS Level II projects were awarded AB 803 grants in two fiscal years covering a total of 27 months of developmental operations, as follows:

MTS Level II Project LEA	Fiscal Year 1987-88	Fiscal Year 1988-89
Fullerton Elementary School District	$ 80,000	$ 80,000
Ocean View Elementary School District	80,000	80,000
Pleasant Valley Elementary School District	90,000	95,000
Placentia Unified School District	80,000	80,000
San Juan Unified School District	80,000	80,000
Santa Barbara High School District	80,000	80,000
Corona-Norco Unified School District	60,000	65,000
South San Francisco Unified School District	80,000	80,000
Upland Unified School District	80,000	80,000
Los Angeles Unified School District	80,000	80,000
Totals	$ 790,000	$ 800,000

2. ***Cost Benefits.*** While the MTS Level II projects were not able to demonstrate any specific cost benefits during these two years of funding under AB 803, they were, by design, intended to increase the effectiveness of state funding. By adopting or adapting proven technology program models that could be replicated by other schools many local education agencies were spared from "reinventing the wheel."

   The return on the state's investment in the MTS Level II program can be estimated in terms of the number of school sites that adopted or used the services of the Level II projects. Effectiveness of the Level II projects was to be determined by the level of their technical assistance to adopting schools. These assessments are covered in the final report of the Far West Laboratory's California Educational Technology Assessment Project. (CETAP).

3. ***Budget Equity.*** The program advisory from CDE announcing the MTS Level II program and inviting applications for preliminary proposals was sent to all California school districts to ensure equal application opportunity. As can be seen in the table above, AB 803 grant awards were fairly constant across the ten projects funded. This remained the case until the projects reached the dissemination phase when other factors were considered in determining the allocations of AB 1470 funding, which ranged from $85,114 to $243,075.

4. ***Leveraging and Institutionalization.*** As with cost benefits, the MTS Level II projects could not demonstrate their full potential for generating additional support through leveraging local district and other resources or for the institutionalization of products and processes except locally during the period of AB 803 funding. The dissemination phase supported by AB 1470 funds is designed to foster both leveraging and institutionalization.

5. ***Budgeting Procedure.*** All of the competitive grant programs instituted under AB 803 included systematic budget procedures and 10:1 (CDE:LEA) matching grant requirements. These procedures increased the likelihood of systematic planning and promoted better fiscal accountability. Consequently, the projects were responsible to district business offices for financial matters and to the CDE for program development and evaluation.

VII. Outcomes from 1987 - 1989

Developmental Phase. During the period of AB 803 funding, the ten MTS Level II projects implemented the program development plans proposed in their original grant applications. In the first 15 month grant period the projects devoted attention primarily to developing and implementing applications of technology in specific academic settings. During the second grant period the projects

were required to devote more attention to assessing outcomes and to documenting resources needed by schools considering adoption.

Evaluation of Outcomes. After the six Level II MTS projects had completed developmental activities, the CDE educational technology office consulted with the various CDE curriculum offices to establish a systematic program review of each project. A panel of specialists from the appropriate content areas was established to determine project alignment with curriculum frameworks. Six projects were determined to be in alignment and were recommended for continuation funding. Corona-Norco, although considered technologically effective, was removed from funding because they were insufficiently aligned with the Mathematics Frameworks. Corona-Norco has subsequently been funded again for the 1991-92 school-year after adjustments to their program and approval by the panel.

Dissemination Phase. In the meantime, the MTS Level II Program was reauthorized under AB 1470 for state funding of dissemination activities and the MTS Level II projects were authorized to provide assistance to School-Based Educational Technology Grant projects in adopting and adapting effective products and practices.

VIII. Status

The six MTS Level II projects identified above received 18-month dissemination grants in January 1990, and are now providing assistance to schools in adopting their programs. Corono-Norco began dissemination activities in July of 1991.

During 1990, the six MTS Level II projects formed the Academic-Technology Model Education Coalition (AMTEC) to coordinate the dissemination of information about adopting and adapting the programs of the MTS Level II projects to schools interested in applying for AB 1470 School-Based Grants. In response to statewide interest, the project directors initiated:

1. Completion and packaging of a variety of project-related materials for use by the California Technology Project (CTP) trainers selected to instruct applicants in AB 1470 proposal preparation, training and technical assistance; and

2. A program of providing direct services to interested districts and schools across the state that were interested in adopting features of MTS Level II projects.

The AMTEC project directors then conducted a series of regional AB 1470 Technical Assistance Institutes to assist with curriculum-specific proposal writing. Since then the AMTEC projects have been providing technical assistance to the 185 School-Based Grant projects that have adopted MTS Level II products or practices. These 185 projects represent 32% of the 595 grants awarded from 1989-90 and 1990-91 AB 1470 funds.

Evaluation Plan for 1989-1991

Review of Existing Data Sources: Data has been collected and analyzed from each of the Level II MTS project sites.

Staff Interviews: The staff interview procedure was expanded from the original plan. An interview protocol, developed by the CETAP project director and the evaluation consultant included categories consistent with those used in all other components of CETAP: *background, planning, content, implementation, evaluation, project specific outcomes, adoption/adaptation, dissemination and marketing, funding and partnership support, the future, and comments and recommendations.* This protocol was designed for use with Level II project directors only. The approximate length of each interview was four hours.

Interviews were also conducted at each of the six sites with the following staff: principal, district administrators, six teachers, twelve students, and other key staff as appropriate.

Self-Assessment Inventory: The Level II MTS *Self-Assessment Inventory* was used to augment the information acquired in the interviews. All six projects completed this 37 page inventory, providing a standard set of data that was analyzed and reported across the projects. Detailed information about *project planning, activities, resources used, impact on students and teachers, staff development, dissemination,* and *support to adopters* was collected and compiled with this instrument. This inventory will serve as a template to guide future project evaluations.

Surveys of Teacher Reactions: Teachers at each of the Level II MTS sites were surveyed to assess a variety of factors including teacher-access and use of technology, type of use, benefits of technology, perception of technology impact on specific student skills, and impact of technology on teaching.

Surveys of Student Reactions: Approximately 20 students at each of the six Level II MTS sites, as well as a representative sample of 41 sites that reported adoption of Level II projects, were surveyed. These surveys were designed to assess a variety of factors including: frequency of use of the various technologies, types of classes where technology is used, content areas that include technology use, perceived impact of technology on grades and other areas, and general reactions to the technology.

Dissemination Assessment: The major sources of data used to assess dissemination are the on-site interviews conducted by the CETAP staff during site visits and the completed *Self-Assessment Inventories* from sites. Questions address such things as: project marketing procedures used (e.g. conferences, etc.), success or failure of various marketing methods in attracting adoption schools, and analysis of service agencies providing the greatest assistance in producing adoptions. Dissemination procedures were also indirectly assessed by surveying the School-Based Grant sites that intended to adopt or adapt Level II projects. These procedures were extensions of the original evaluation plan.

Adoption Evaluation: The original proposal was expanded to include the development of forms and procedures for assessing the Level II project adoptions. The CETAP Project developed and distributed the following dissemination assessment forms:

- Academic-Model Technology Program Adoption Survey - A survey to determine the degree of adoption of the Level II Project.
- Adoption-Adaptation Agreement Planning Form - A contract with the adopter and the Level II Project.
- On-Site Evaluation Form - An interview form for evaluators to determine the degree of adoption of a Level II Project.

- Portfolio Assessment Plan and Scoring Criteria - A form for projects to design and score portfolio assessments.
- AMTEC Evaluation Planning Matrix - A matrix to assist projects in selecting instruments to assess student, staff, and program impact of the Level II Project.
- Project Adoption Status Inventory - A record form to keep track of adoption sites and the specific activities adopted.

The CETAP Project Director provided training in the use of these forms in October of 1990. The use of these data collection materials was to be a major component of the dissemination assessment. However, Level II staff have reported in interviews that they understand the need to evaluate dissemination but that they lack resources (time, money, personnel etc.) to follow through.

A major source of evaluation data to assess adoptions of Level II projects are the questions asked in the *School-Based Educational Technology Project Self-Assessment Inventory*. These questions provide in-depth information about the use of Level II practices and resources.

Case Studies: Eleven site visits to Project Adoptions were made and results are included as part of the School-Based Grant section. This was a significant addition to the original plan.

The matrix on the following page lists each of the instruments as Data Sources and shows the emphasis of each for the planned evaluation questions for Level II projects.

Instrumentation Matrix:
Academic-Technology Model Programs (MTS Level II)

● = Primary Emphasis
◎ = Secondary Emphasis
○ = Little or None

To What Extent...	Data Sources							
	Self-Assessment Inventories	Project Staff Interview Protocol	Teacher Interviews	Student Interviews	Project Proposals/Plans	Project Evaluation Reports	Student Records and Test Scores	School-Based Grant Data
1. Were the program outcomes attained? ★	●	●	◎	○	○	○	○	○
2. Were major activities implemented as planned? ★	●	●	◎	○	○	●	○	○
3. Were there changes in site-based planning for technology?	◎	◎	○	○	○	○	○	○
4. Did the project support the state curriculum frameworks?	◎	◎	◎	○	○	○	◎	○
5. Was staff development that supported implementation provided? ★	◎	◎	●	○	○	◎	○	●
6. Was project implementation coordinated with other programs? ★	◎	◎	○	○	◎	○	○	◎
7. Did the project improve the management of learning resources?	◎	◎	◎	○	○	◎	○	◎
8. Did student performance (academic and affective) improve?	○	◎	○	◎	○	●	●	○
9. Were there desired changes in instructional practices (teacher perf.)?	◎	◎	●	○	○	◎	○	○
10. Was implementation restricted and why?	◎	●	◎	○	○	◎	○	◎
11. Was implementation supported or facilitated and why? ★	◎	●	◎	○	○	◎	○	◎
12. Was there increased parent/home involvement?	○	●	◎	○	○	◎	○	○
13. Was there dissemination of knowledge and/or products?	◎	◎	◎	○	○	◎	○	●
14. Were unanticipated outcomes assessed? ★	◎	◎	◎	◎	◎	◎	◎	◎
15. Was there equal access for students, teachers, and administrators?	◎	◎	◎	◎	○	◎	○	○
16. Did the project assist other schools to implement technology? ★	●	●	○	○	○	◎	○	●
17. Did new business and higher education partnerships result?	◎	●	○	○	○	◎	○	○
18. Did the program implement the CDE goals and initiatives?	○	○	○	○	○	◎	○	○
19. Did the program stimulate increased school planning/resource mgt.?	●	●	○	○	○	○	○	◎
20. Do teachers and administrators value the program(s)?	◎	●	○	○	○	◎	○	●
21. Can the program be evaluated and show cost benefits?	◎	◎	○	○	○	◎	○	◎
22. Should the program be continued,discontinued, or expanded? ★	◎	◎	◎	○	○	◎	○	◎
23. Should the program/practice be disseminated? ★	◎	●	◎	○	○	○	○	●
24. Was assistance provided by the CTP? ★	◎	●	◎	○	○	○	○	◎
25. Was assistance provided by the CDE? ★	◎	●	○	○	○	○	○	○
26. Have SBET projects adopted/adapted MTS Level II elements?★	○	◎	◎	○	○	◎	○	●
27. Are adoption sites obtaining similar results?★	◎	◎	◎	○	○	○	○	●
28. Are specific methods of dissemination effective?★	○	◎	◎	○	○	○	○	●
29. Does adopting an MTS Level II project effect SBET implementation?★	○	○	◎	○	○	○	○	●
30. Does adoption promote curriculum alignment and integration? ★	◎	◎	○	○	○	○	○	◎
31. Has the IBM equipment donation effected MTS Level II projects? ★	◎	●	◎	◎	○	◎	○	◎

★ Added to questions required by the RFP

Level II Model Technology School Projects
Summary of Findings

Among the data sources used to evaluate the six Level II MTS Projects were the *Level II Project Self-Assessment Inventory*, student and teachers surveys, site visits with interviews, and data from the *School-Based Grants Self-Assessment Inventories* of schools that adopted or adapted Level II programs or practices. Following is a summary of the findings for each project.

Project FUTURE

"Our project started because of our belief in students and the future, and we knew that technology could play an important role in connecting both; it was no accident that we named it 'Project FUTURE,'" indicated one of the teachers. The director further explained that the goal to connect students with the future through technology served as the guiding principle of the project. "We never lost sight of this idea over the years, either," she stated.

Project FUTURE's specifically stated purpose was to enhance student learning through language arts curriculum, reflecting California curriculum reform guidelines, with the use of current technologies. The director's background in language arts and her familiarity with the state curriculum frameworks created a natural alliance that has served seventh and eighth grade students at Crest View School well.

Heterogeneously grouped students, working collaboratively using computers, laserdiscs, VCRs, camcorders, liquid crystal display panels, modems, CD-Rom, and cameras, have experienced enhanced meaning-based instruction through a variety of activities. "Everything we do, especially exploration and experimentation with the technologies and the curriculum, we do for the kids," stated one of the teachers. "Sometimes it's a risk, but it's that freedom to take risks that allows for creativity and increased student learning. We've had an entire shift from teacher-centered activities to student-centered ones. It's very gratifying for us as teachers." Another teacher added, "It reminds me of 'A Time in Camelot.' Teachers and students work together as a team. That's the pleasure."

I. Background Information

A. Project Background

Project FUTURE is a middle school language arts/technology program developed with students represented by Hispanic, Asian and Caucasian populations, more than two-thirds of whom were limited English proficient. A variety of technology applications are employed to enrich curriculum presentation, information resources and student assessment activities.

B. Development/Demonstration Site Demographics

The site for Project FUTURE is Crest View School in the Ocean View School District located in Huntington Beach – a predominantly suburban area. Crest View's 1990-91 enrollment was 451 students in grades K-8 and it employed fourteen teachers. The ethnic make-up of the school was predominantly Caucasian (46%) and Hispanic (38%) with some Asian (15%) and Black (1%) students. In addition to

Crest View, four other schools in the district received services and technology-based resources from the project.

During the January 1990 through June 1991 funding period, Project FUTURE directly served 268 students in grades seven and eight. Most students were enrolled in the federal Chapter I program with five percent in special education programs.

C. Project Description

The major objectives and expected outcomes of Project FUTURE were:

1. Awareness
   - Provide awareness information regarding model curriculum practices, site visitation opportunities, and products/services state-wide.
2. Installation
   - Provide curriculum modeling for Middle Grade Reading and Language Arts Demonstration Schools. Five schools will receive assistance the first year and ten the second year.
   - Provide adoption/adaptation training for ten AB 1470 School-Based Educational Technology Grant Sites.
   - Produce a "Technology in Language Arts" videotape to introduce and illustrate technology use within an integrated language arts curriculum.
   - Provide a three-day "Technology in Curriculum Institute" for 28 California Literature Project (CLP) regional trainers on technology use in language arts.
   - Develop and showcase additional technology environments, such as IBM and Commodore, parallel to the Apple environment at the project site.
   - Participate in the Academic-Model Technology Education Coalition's (AMTEC) three Level II planning meetings during the 1990-91 school year.

The major activities reported for staff and students were:

1. All students utilize computers, laserdiscs, CD-ROM, cameras, and camcorders integrated with the language arts core curriculum.
2. All students regularly use the writing lab for word processing of classroom assignments.
3. Project staff provided modeling and in-servicing for visitors.
4. On-site and off-site in-service is conducted as scheduled by project adopters and other interested school districts.

The major results/outcomes reported for the project were:

1. Project FUTURE, in the dissemination mode, provided access to technology in language arts applications.
2. Crest View students in grades seven and eight and the project staff used technology tools as part of their everyday learning/teaching experiences.

"Many of the ESL students don't know a word of English. Seeing their thoughts and words on the computer screen, whether it be a journal entry or a letter home to mom and dad, or to see a product that they've done, to see their progress from beginning to end, it's so productive. By the time they graduate from eighth grade, they are very computer literate, and their writing skills have improved tremendously."

II. Planning

A. Planning for Project Development

Project FUTURE was developed primarily to meet the following needs and interests: to try something new, to increase technology use, to improve student learning and attitude, to prepare students for future employment, to make teaching more exciting, to enhance the curriculum, to facilitate student learning, and to provide for staff development.

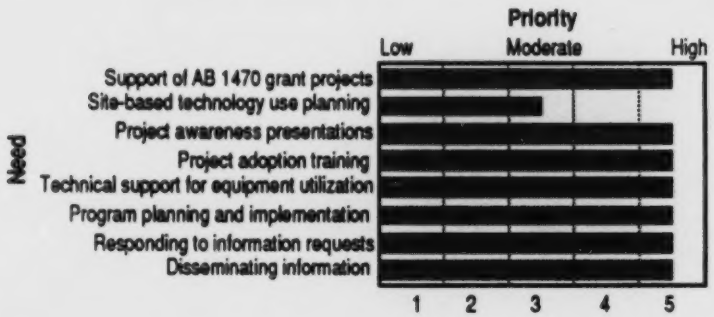
Both the Chapter I committee and a committee established for the project were involved in the planning process. The committee was involved in proposal development, project implementation, project change advisement, project monitoring, and evaluation. Technology use was written into Crest View's existing School Improvement Plan. Six teachers, two parents, two school administrators, two classified staff members, and two district administrators were involved in planning and implementing the project.

"Planning was a key to a successful operating strategy. Implementation of all phases of this project was assisted by the forward thought generated by staff."

The project directors were asked to indicate the emphasis given to major educational and program priorities during January 1990 - June 1991. Figure 1, below, shows the rating assigned to the different priorities by Project FUTURE.

"We've had a great team. We've been very open with one another, very collaborative, very cooperative."

Figure 1: Project Priorities



B. Modifications to Original Proposal Plan

Major changes were made in the project objectives, activities, participants and purchases from what was originally proposed. Due to the fact that the number of AB 1470 School-Based Grant projects wishing to adopt Project FUTURE was more than triple the original projection, they were given priority over other planned activities. The implementation of some Project FUTURE activities was delayed due to a lack of equipment. Equipment from IBM did not arrive until May 1991, and a gift of equipment received from Commodore turned out to be unusable without significant additional purchases. Due to the large number of AB 1470 adopters and additional educator interest generated by the project, many more teachers participated than had been anticipated in the original plan.

III. Content

A. Areas of Focus

English-language arts was the major curriculum area addressed by Project FUTURE. History-social science was included as a secondary area of emphasis. The major school-wide areas of emphasis were general technology use, integration of technology into the curriculum, and professional development. Critical thinking and cooperative learning were the major areas of focus for student process skills with secondary emphasis placed on study skills and interest/attitude.

> *"The real strength of the project is its application to and integration of the curriculum frameworks."*

B. Technology Applications

The major types of technology hardware used in the project were computers, laserdisc players, and camcorders. Also utilized were instructional television, LCD overhead projection panels, CD-ROM drives, and telecommunications.

Fifteen computers were purchased by the project since January 1990, including ten Apple Macintoshes, four IBM PS/2s, and one Apple IIGS with a video overlay card. Other computer equipment purchased included a NEC CD-ROM drive, an Apple laser printer and an LCD overheard projection panel and projector. Also purchased were three VCRs and a fax machine.

> *"However" continued the director, "technology in and of itself was not of interest to us. It's what the technology does with the curriculum that is important."*

The major types of software used were word processing/desktop publishing, multimedia, and electronic reference. Graphics programs and telecommunications software were also used.

The project directors were asked to list the five most widely used software, video, laserdisc, and/or CD-ROM titles and rate the effectiveness of each title in supporting the project's objectives. It was suggested that the project director ask for the opinions of the staff members who most frequently used the products before determining the effectiveness ratings. The two most widely used computer programs were *Microsoft Word* and Scholastic's *Bank Street Writer III.* Both received the highest rating on the scale of effectiveness, which ranged from one to five with five being most effective. The most popular CD-ROM title was *Grolier's Encyclopedia*, which received a rating of four. Two laserdisc titles

were listed: *National Gallery of Art* by Pioneer, which received a rating of five, and *First National Kid Disc*, which received a rating of four.

IV. Project Implementation

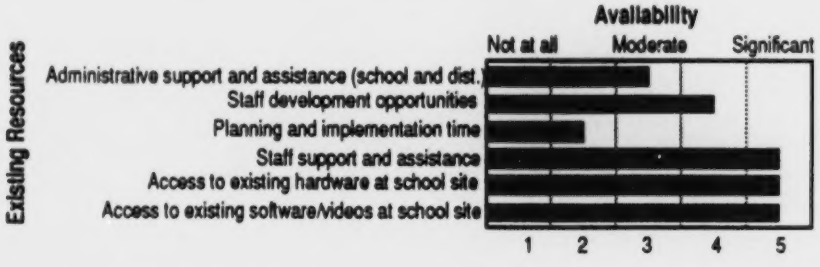
A. Implementation Schedule

Project FUTURE was scheduled to begin activities funded by AB 1470 on January 1, 1990, but the project staff decided to continue activities previously begun under the AB 803 funding before receiving the new money. Thus the actual starting date for the proposed activities was September 1, 1989.

B. Project Management and Implementation Resources

The project director was primarily responsible for project management at the school site. Assistance was received from a school resource person, the California Technology Project (CTP), the local ITV regional agency - Telecommunications of Orange County (TOC), and an outside consultant. These sources of individual assistance were usually available to assist in project implementation. The project directors were asked to rate the availability of various resources which were in existence before the start of the project. Figure 2, below, shows these ratings for Project FUTURE.

Figure 2: Availability of Existing Resources



C. Staff Development and Technical Assistance

The Project Technical Coordinator provided the major source of technical assistance. The Coordinator installed and maintained equipment, selected appropriate software, integrated technology with the curriculum, and provided problem solving/trouble shooting services.

Project FUTURE conducted a total of 34 workshops between January 1990 and June 1991. Eight of these workshops were AB 1470 School-Based Grant one day technical assistance sessions which covered technology use planning, basic awareness of the project and the services available to adopters.

> *"We meet an 'entry-level' need of schools and I think we really connected. Lots of schools benefitted. They didn't know about many of the resources available to them, such as ITV, CTP, etc. We tried to cover the waterfront. Our goal was to have them be a resource in and of themselves, using what is out there."*

This series of workshops was co-sponsored by the CTP and trained a total of 428 educators. Four two-day sessions and two one-day sessions were also conducted for AB 1470 projects planning to adopt Project FUTURE. The two day sessions were co-sponsored by the CTP and TOC. TOC conducted

presentations on ITV utilization. Thirteen in-services were conducted for the staffs of specific adoption sites. Most of these were co-sponsored by the adopting districts. In all, 25 (76%) of the workshops conducted were to support AB 1470 School-Based Grant projects. Among the non-AB 1470 workshops were a series of four training sessions conducted at the Spring 1990 Association of California School Administrators (ACSA) conference, a half-day session at the 1990 CTA conference, and a three-day workshop co-sponsored by the California Literature Project.

> *"I often felt I should better systematize my work with other schools. I never did. As I look back, I felt it worked better to work with the schools solely on their needs alone."*

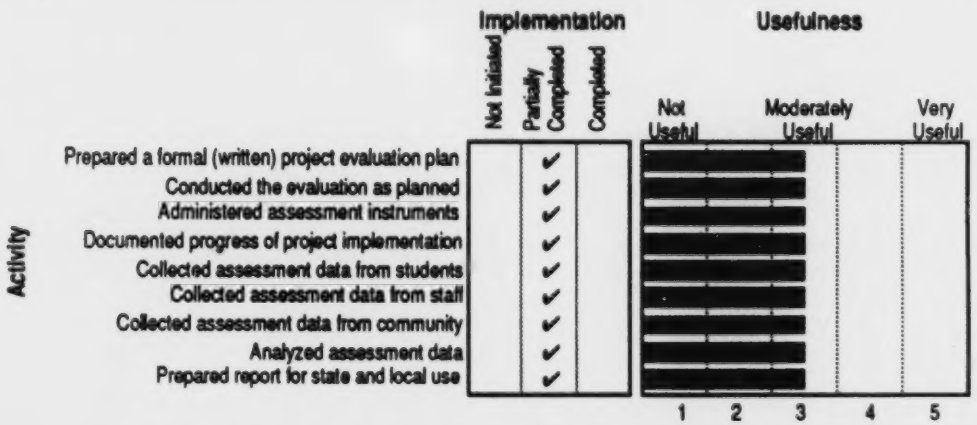
All but one of the 34 workshops included information on technology use planning, 25 (76%) included Project FUTURE awareness presentations, 15 (45%) provided in-depth information on the project, and 6 (18%) provided follow-up assistance. Five of the workshops covered locally initiated topics.

> *"During our workshops, we always provide schools a copy of the* Educator's Guide for Evaluating Educational Technology Programs. *It's been very helpful for us and for a lot of the projects."*

D. Evaluation Procedures

Projects were asked to state the level of implementation and rate the usefulness of a series of evaluation activities. Figure 3, below, depicts this information for Project FUTURE. The assessment data collected by the project was from the adoption sites rather than the development and demonstration site.

Figure 3: Implementation of Evaluation Activities



The project evaluation plan included on-going assessment activities (formative evaluation) that were implemented as stated in the proposal. The project director was primarily responsible for the evaluation. The quantitative data included logs of computer use and multiple data sources specific to the different adopters. Formal evaluations were conducted of the project adoption workshops, technology use planning workshops and AB 1470 proposal writing workshops. Participant surveys with a mix of open and close-ended items were used to evaluate these services.

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> *"Trying to evaluate our work with the various schools was easy. We'd pass out evaluation forms and the participants would fill them out. What we didn't get though, was the feedback later, about how useful our services were in the long run. We have sent out staff and student surveys to all our adopters, but we're not getting them all back. I don't know how many will come back."*

E. Extent of Implementation

The original project activities, as outlined in the proposal, were completed as planned with the exception of the middle school reading and language arts demonstration projects not being in-serviced specifically by Project FUTURE. The demonstration projects did participate somewhat in Project FUTURE, however.

Among the completed activities were: awareness sessions for AB 1470 proposal writers, awareness sessions at conferences, AB 1470 implementation workshops, and California Literature Project Technology Leadership Cadre trainings. These activities will be repeated in 1991-92. Partially completed activities included: the "Technology in Language Arts" videotape, showcasing of the IBM environment, and the AMTEC coordination meetings. Demonstration of IBM equipment will be continued next year.

F. Staff Activity

Figure 4 shows the estimated level of staff effort dedicated to each of the project's activities which supported AB 1470 School-Based Grant projects.

Figure 4: AB 1470 Support Activities

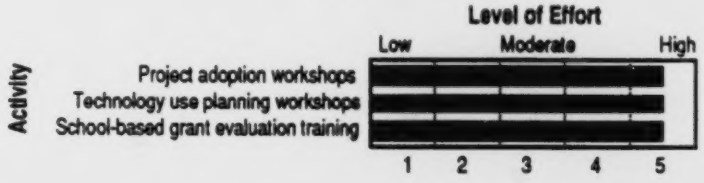


Table 1 shows the estimated number of publications produced by Project FUTURE.

Table 1: Project Publications

Publications Produced or Distributed by Project	Number of Publications	Number of Copies Printed
Workshop Schedules	50	5,000
Announcements, Brochures, Flyers	10	5,000
Project trainer of trainers manual	1	200

G. Collaboration with Other Agencies

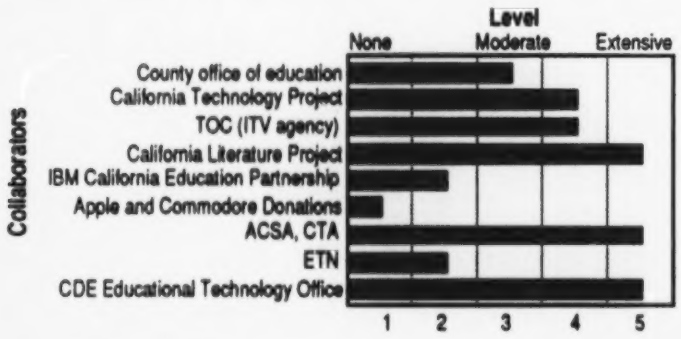
Project FUTURE collaborated with a variety of other projects and agencies. Among the ongoing resources listed were the county office of education, the CTP, TOC, the California Literature Project, and the California Department of Education's Office of Educational Technology. Extensive conference presentations were conducted in conjunction with ACSA and CTA. The Educational Telecommunications Network (ETN) helped to produce the language arts video. Equipment and

training were received from the IBM California Education Partnership and the project was involved in initiating partnership activities. Other industry partnership activities included donations from Apple and Commodore.

> *"We used CTP, but not a lot; we didn't really have a primary need. They were willing to assist Level II projects whenever they were asked, though."*

Figure 5, below, shows the project director's ratings of the level of collaboration with each agency.

Figure 5: Level of Collaboration



H. IBM California Education Partnership

Project FUTURE will be receiving equipment, software and training from the partnership in three different areas: hypermedia, desktop publishing, and word processing. The hypermedia technology will be used to create Linkway folders. Students and teachers will design and produce Linkway folders which address classroom curriculum. The desktop publishing system will be used by students to create a four page heavily pictorial journal which will be multi-lingual and representative of the attitudes and interests of the students and their community. The word processing systems will be used by students in language arts and ESL classrooms to produce classroom assignments related to the core curriculum. Extensive use of the IBM equipment will begin in 1991-92.

Project staff have been trained by county office personnel in the use of EdLAN, operation of the IBM systems and networking. The equipment will be installed by Photo and Sound, an independent contractor.

The primary benefits foreseen in the IBM project are technology access for a greater number of students and increased technology skills for students entering the job market.

V. Project Dissemination

A. Marketing Efforts

Project FUTURE began dissemination activities in October of 1988. The project director stated: "We began to share as soon as we had something to share." Figure 6 shows the effectiveness of various means for stimulating awareness of the project, as rated by the project director.

Figure 6: Impact of Various Marketing Methods

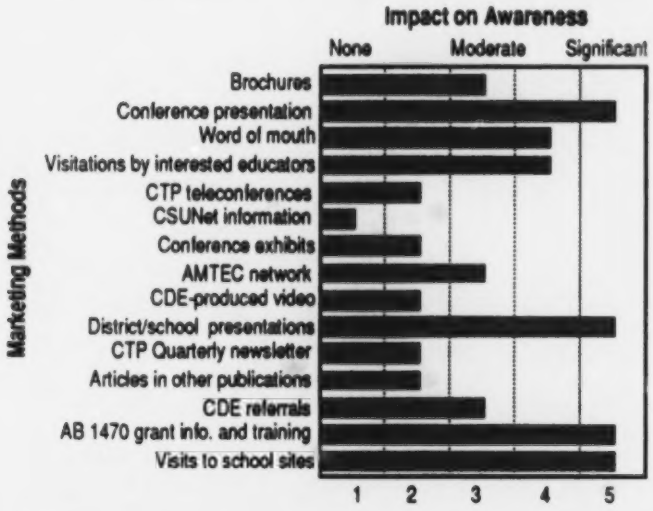


Table 2 shows the number and cost of products produced for the dissemination and adoption of Project FUTURE between January 1990 and June 1991.

Table 2: Dissemination Products

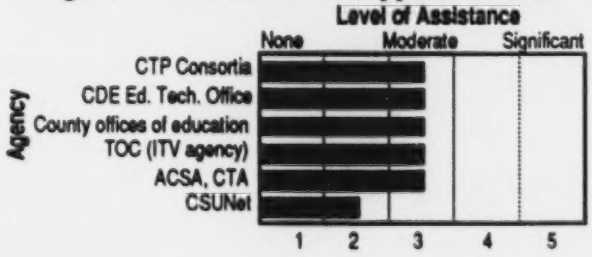
Products	Quantity Produced	Cost
Project specific brochures	5,000	$150
Contribution to AMTEC brochures	1,000	$400
In-depth information portfolio	500	$75
Training guides	200	$1,000
Supplemental training materials	N/A	$500
Project-produced video	in production	> $32,000

In addition to the development and distribution of publications the project conducted a variety of dissemination activities, including two teleconferences, ongoing individual contacts, two formal regional workshops, and many on and off-site visitations.

> *"Staff development is our major product. We will have a videotape completed soon; it's in process and being edited right now."*

The projects were asked to rate the support systems that actively helped disseminate information and training. As shown in Figure 7, no significant assistance was provided by any of these services to Project FUTURE.

Figure 7: Dissemination Support Services



B. Dissemination Evaluation

A qualitative assessment of the impact of dissemination activities was performed, and a report is being developed.

C. Adoption/Adaptation

The minimum criteria that must be met for a project to be considered an adoption of Project FUTURE are:

- Attendance of project staff for at least one full day in-service or trainer-of-trainers workshop
- Application of any technologies for core curriculum purposes

The specific elements of Project FUTURE that were adopted most often were:

- Writing lab elements/activities
- Literature-based core instruction
- Technology use for core instruction support
- California Assessment Project writing, using word processors in the writing process
- Book Talks: Oral Language Development

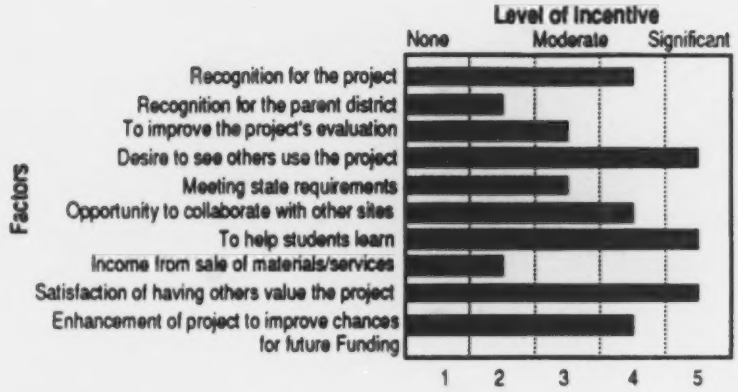
The project does not establish formal agreements with adoption sites regarding the implementation of the minimum criteria or use of specific services. However, a variety of activities were performed to evaluate the extent of adoption at the various sites. Project FUTURE helped ten AB 1470 adoption sites to design evaluation plans, conducted follow-up visits or on-site evaluations of two projects, and conducted follow-up telephone monitoring of all sites and asked them for written documentation of evidence of adoption. A survey was not conducted to determine the extent of adoption.

> *"We tried consulting agreements at first with our adopters. It's too time consuming and too formal. It scared them."*

In all, 38 sites were listed as adopters of Project FUTURE. Of these, 27 (71%) were AB 1470 School-Based Grant recipients. Thirty-two (84%) were provided with formal on-site training and follow up, with the remainder receiving only informal on-site contact. The majority of the adoptions (76%) had at least one major project element in place. Of these, five were stated to have replicated most major elements of Project FUTURE. Four of these five were AB 1470 grant recipients. Six projects were known to be exemplary adoptions, suitable for visitation by other educators.

The project director was asked to indicate the degree to which several factors served as incentives for them to encourage other districts/schools to adopt or adapt the project. Figure 8, below, shows the ratings supplied by the director of Project FUTURE.

Figure 8: Incentives to Disseminate Project



VI. Project Support Resources

A. Services

The Ocean View School District assigned the Assistant Superintendent of Educational Services to assist with Project FUTURE. The support of the Assistant Superintendent has been of moderate value to the planning and implementation of the project. The most significant sources of external support to the project were: the director of the California Literature Project; the director of Project Links (another Level II MTS project), TOC, and the California Technology Project.

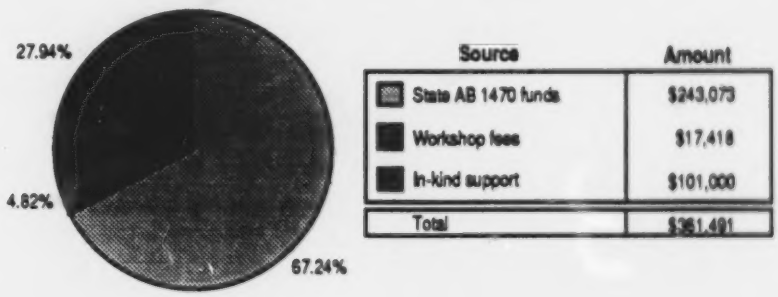
> *"What's lacking is resources, specifically 'people' resources. One of the other project directors and I did the 3-day training. We're a great team! But we both have so many other hats to wear as well."*

VII. Funding Support

A. Funding Sources

Project FUTURE received a grant of $243,073 from the CDE to fund its development and dissemination activities from January 1990 to June 1991. This funding was provided by AB 1470. An additional $17,418 was provided by workshop fees and the value of in-kind support received was estimated to be $101,000. Thus the total revenue received by the project was $361,491. Figure 9 shows the distribution of the project revenue sources.

Figure 9: Revenue Sources



Source	Amount
State AB 1470 funds	$243,073
Workshop fees	$17,418
In-kind support	$101,000
Total	$361,491

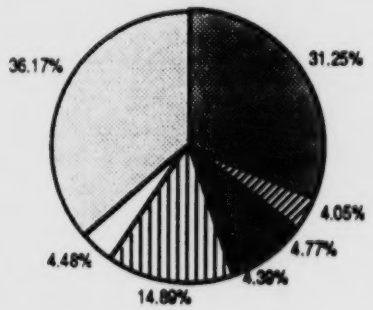
It is anticipated that the project will receive $98,743 in AB 1470 funding for the period from July 1991 to December 1992.

The in-kind support was received from a variety of sources, including $24,000 in California Literature Project funding received from Ocean View School District, government-rate air travel reservations made through the CTP, ITV utilization presentations conducted by TOC, and $74,500 worth of hardware and software received from IBM, Apple and Commodore. Contributions from the CTP and TOC will continue in 1991-92, but the other contributions are unlikely to reoccur.

B. Project Expenditures

Project FUTURE's total expenditures for January 1990 - June 1991 were $341,290 including the IBM, Apple and Commodore equipment donations and the $24,000 contributed by the California Literature Project. The California Literature Project contribution was used to pay for consultant ant services. Over 28% of the project's expenditures were covered by in-kind donations as described in the above paragraph. Figure 10, shown below shows the distribution of project expenditures. Many of the figures are estimated as final accounting data was not yet available when the Self-Assessment Inventory was completed.

Figure 10: Project Expenditures



Expenditure	Amount
Professional staff	$106,650
Support staff	$13,830
Staff benefits	$16,281
Materials/supplies	$14,980
Contract services/ expenses	$50,815
Indirect costs (8.65%)	$15,284
Technology hardware	$123,450
Total	$341,290

VIII. Supporting and Impeding Factors

A. Facilitating Factors. Knowledge of effective dissemination strategies was found to be the major facilitating factor. The moderate facilitating factors were interaction with the CTP and technology manufacturers, availability of staff and consultants to provide professional development, and incentives to disseminate the project outside the district. The lack of a geographically defined service area and the guidelines and expectations of the CDE were found to have a slight facilitating effect.

B. Impeding Factors. The major impediments to project implementation were insufficient funding from AB 1470 and what the project director felt were excessive evaluation requirements. The project director indicated the *Self-Assessment Inventory* was too long and that it was provided too late in the year. District turmoil, including the threat of school closure, was found to have a slight impeding effect on the project.

C. Anticipated Changes. It is expected that project implementation will be greatly facilitated by collaborating with project LINKS in 1991-92. Project FUTURE will continue to provide workshops and

visitations while Project LINKS, an elementary school language arts project in Fullerton, provides adoption services and activities.

IX. Project Outcomes

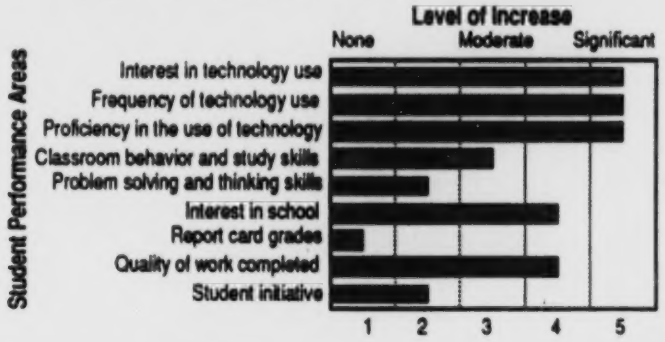
A. Student Outcomes

Findings from the Self-Assessment Inventory: The project directors were asked to rate the observed changes in students participating in project-related instructional activities. The most significant improvements noted at Project FUTURE were in student interest and proficiency in the use of technology. Student interest in school and quality of assignments completed were also found to be increased.

> *"Students are very comfortable and creative in utilizing technology totally independent of teacher assistance. Across the board they are respectful of the trust offered them in its independent use. Little hardware has been damaged."*

Figure 11 shows the extent to which the project increased student performance in a variety of areas.

Figure 11: Effects of Project on Students



The project was reported by staff not to have an observable effect on student report card grades. Achievement test scores were not available due to changes in the state testing program.

Some of the specific changes noticed by project staff were that students were able to independently select and operate technology equipment, students are highly motivated to use technology, and that students regularly employ technology in creative problem-solving situations. The project staff believe important benefits for students were attained and clearly worth the effort. They also report these benefits would probably not have been attained without the project.

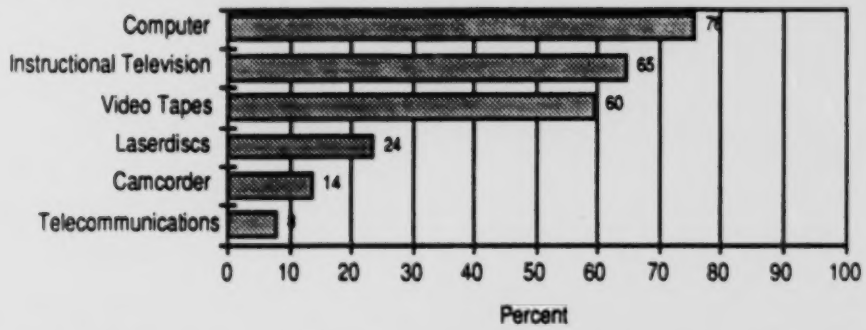
Findings from Student Surveys : One hundred sixteen surveys were returned from Crest View School, representing 43 percent of the 268 students served by the project. Sixty percent of the students surveyed were seventh graders and 40 percent were in eighth grade.

Technology Use: A variety of technologies were used by Project FUTURE. As shown in figure 12, almost all students stated they used computers at least once per week. Few students use computers on a daily basis, however. More than two thirds of the students used instructional television and video tapes once per week or more. Laserdisc players, camcorders, and telecommunications were used by a smaller percentage of students.

Most students (97%) use computers in the school's computer lab. A few stated that they also use computers at lunch (8%), in the library (22%), and at the lab after school (24%). Twenty-eight percent of the students have computers at home. Most students (88%) stated they use computers to do reports and assignments and to play games (91%).

Computers were cited by all students as being used in English, writing, and reading instruction which is the main focus of the project. Computers were used to a lesser extent in math (53%), social studies (42%), and science (5%).

Figure 12: Percent of Students Using Technology at Least Once per Week



Impact of Technology: Students overwhelmingly indicated they had been positively affected by the use of technology since Level II MTS projects had been implemented in their schools. When asked to distinguish areas where improvements had been particularly noted, they identified the following:

Student Indicators of Success

- Ability to Work With Others 84%
- Increased Grades 82%
- Better Writing Skills 71%
- Better Attitude About School 71%
- Greater Self-Esteem 69%
- Increased Problem-Solving Skills 58%
- Better Study Skills. 49%
- Increased Reading Abilities. 41%

Students indicated the greatest increase in their grades in English, followed by social studies, science, and math. Sixty-one percent of the students felt that computers had significantly improved their abilities in studying with 31 percent indicating computers had improved their abilities "a lot." An even greater number of students stated that their writing abilities had been improved – 83 percent noticed significant improvement with 60 percent indicating they had improved "a lot." Similar but slightly smaller improvements were seen in reading and problem solving.

Most of the students believed their grades had improved as a result of using technology. Only 10 percent stated their grades had not been improved. English/reading/writing grades were stated to be improved the most, followed by math, social studies, and science. Sixty-two percent of the students found English/writing/reading to be "a lot" more enjoyable and half the students reported that their grades had improved "a lot" in these subjects.

Other significant areas of improvement were: ability to work with others (cited by 81%), attitude about going to school (66%), and self esteem (65%).

Student Comments: Students were asked to describe how the increased use of technology at their school has made a difference for them. The most common comment was that computers had made writing easier and more enjoyable.

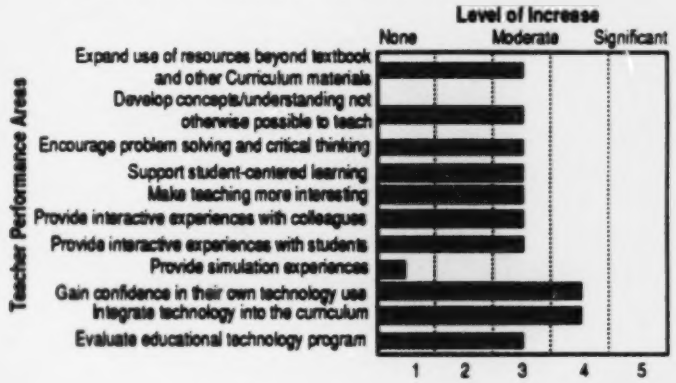
> *One student stated: "It's fun to go to the computer lab and type. It's a lot more interesting than just writing it on paper. It's a lot easier and faster."*
>
> *Many responses also showed increased motivation and interest in school. A seventh grade student wrote: "It helps me enjoy school a lot more than before. I used to try getting out of going to school almost every day. Now I try to go even when I am sick."*
>
> *Some students reported that their problem solving skills were improved through the use of technology. One said: "Technology has improved my way of thinking. Instead of just jumping into something, I think about it step by step."*

B. Staff Outcomes

Project FUTURE met most of its staff development objectives. The projects were asked to rate observed degree of change in teachers as a result of the staff development activities. The greatest improvements were found to be in teacher confidence in their own technology use and in the ability to integrate technology into the curriculum.

Figure 13 shows the extent to which the project staff reported improved teacher performance in a variety of areas.

Figure 13: Effects of Project on Teachers



Project staff report the high availability of technology resources provided by the project was responsible for the increased teacher confidence in technology use. The model classroom greatly facilitated teacher integration of technology into the curriculum. Overall, the project caused a moderate to significant increase in staff usage of technology in the classroom. Important benefits for teachers, which probably would not have occurred without the project, were attained and worth the effort in staff development.

> *"Resistance to positive change occurs most actively among those with the least commitment to education and the least information about elements which improve instruction."*

C. Program Outcomes

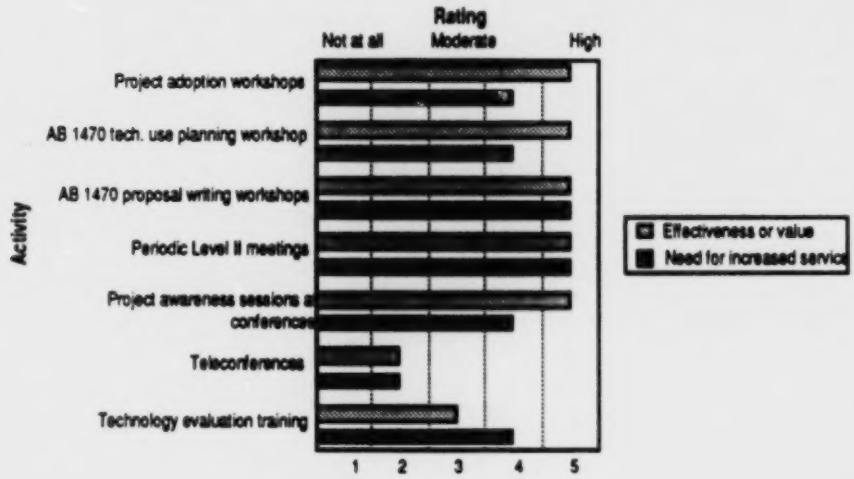
Project FUTURE stimulated a significant increase in staff familiarity with and use of the state curriculum frameworks. A moderate to significant improvement was also noted in the management and coordination of learning resources. Some aspects of the project were incorporated into the School Improvement Plan and most elements of the project are likely to become institutionalized and continued as part of the language arts instructional program. Multiple additional uses of technology have occurred at Crest View due to Project FUTURE, including expansion to hypermedia technology and the use of IBM equipment.

> *"Project staff is increasingly comfortable using new and emerging technologies. As familiarity develops with technologies and the software that emerges to support them, technology use becomes more creative and effective within instruction."*

D. Impact of Services

The project directors were asked to rate the perceived effectiveness or value to participants of each service offered by the project. Additionally, they were asked to rate the perceived need for increased services. Feedback used to determine the ratings ranged from completion of formal evaluation instruments to informal comments and testimony. Surveys were used by Project FUTURE to rate the effectiveness of AB 1470 support services, workshops, and project awareness sessions at conferences. See Figure 14 below for these ratings.

Figure 14: Effectiveness and Need for Services



E. Cost Benefits

Given the objectives and expectations of Level II MTS project dissemination, the project director believes that the funding level for the project has been adequate. However, it would have been impossible for the project to accomplish what it has achieved without the existence of in-kind contributions and volunteer assistance. If AB 1470 funding were terminated, all out-of-district services would have to be terminated and the project would not apply for other funding to continue. In general,

the project director believes the Level II MTS dissemination model is a cost-effective approach to providing information and training on exemplary models to other districts.

F. Unanticipated Outcomes

Among the unanticipated findings encountered by project staff were:

1. Students have become highly independent technology users
2. The project staff have become a close-knit, highly professional operating group
3. The amount of adopter response was under-anticipated
4. Technology-in-curriculum uses continue to emerge with continuing model project development

> *"I didn't anticipate the number of K-6 schools that would be interested in adoption. There were so many."*

X. Recommendations

The following recommendations were given by Project FUTURE staff:

1. Level II MTS projects need a systematic telephone conference ability.
2. Projects with many adopters require additional monetary support.
3. The level of financial support for projects should be based upon the amount of service anticipated for 1992 and delivered in 1991.
4. The evaluation form is much too long and not well geared to Level II MTS projects. It should be simplified and delivered earlier in the project year.
5. AB 1470 school-based grants should be required to have written agreements with projects that they are adopting or adapting.
6. Regular meetings should be held between the Level II MTS projects and the CTP.

Project TASC II

The TASC II project began with the idea that middle school science curriculum could be enhanced with the use of a variety of technologies. To accomplish this, a vacated choral room in the school became the "knowledge lab;" computers, laser disk players, VCRs, a scanner, and other assorted pieces of technology were moved into the room. Seventh and eighth grade students in groups of thirty took turns in the room on a quarterly basis. Student science aides, computer aides, ESL and SDC students also used the room regularly. Teachers and instructional aides visited when they needed help or had projects related to science to do on computers.

Students studied science in a variety of ways, linking technology to the curriculum. For example, micro-labs were designed for a variety of scientific investigations such as testing individual reflexes. Using Toy Shop, students built models of real inventions. Science notebooks were done on the computer and included both writings and drawings. But much more than science was being studied in the lab: history, math, problem solving, inductive and deductive reasoning, designing, communications, and much more, were also a part of the curriculum. "I couldn't believe how much was accomplished in one room," indicated one of the teachers. "It was a whole new world for the students."

TASC II has undergone significant changes over the past three years, the greatest occurring just recently with the sudden and unexpected death of the project director. With an interim director, many dissemination activities originally scheduled were cancelled or postponed. Although the knowledge lab has continued fairly intact, much of the expertise, information, networking, and presentations are missing. The new director has been assigned to the project for the upcoming year in an attempt to better align with original project intentions. The new director commented, "TASC II has always been a very unique project, and I want to make sure that it continues in that vein. I also want to insure that more teachers are involved and that we expand exponentially."

I. Background Information

A. Project Background

Technologies Applied to Science Curriculum (TASC II) is an instructional program in life, physical and earth sciences for students in grades 7 and 8. TASC II was developed to make use of computers, laserdiscs, telecommunications, robotics and video to provide students with interesting, hands-on exploratory experiences for "high impact intervention learning."

B. Development/Demonstration Site Demographics

The project development/demonstration site for Project TASC II is Upland Junior High School in the Upland Unified School District located in Upland – a predominantly suburban area east of Los Angeles. The director of this project died in November, 1990, requiring a new project director to become responsible for completion of the project's evaluation. Upland's 1990-91 enrollment was 850 students in grades 7-8 and it employed 33 teachers. The ethnic make-up of the school was predominantly Caucasian (50-55%) and Hispanic (35-30%) with some Black (10-15%) and Asian (5-10%) students. One other school in the district, Pioneer Junior High, received services from the project.

During the January 1990 through June 1991 funding period, Project TASC II directly served approximately 300 students in grades seven and eight.

C. Project Description

The major objectives and expected outcomes of Project TASC II were:

1. Create a management systems model .
2. Model science curriculum will be integrated with technology and aligned with the state curriculum frameworks.
3. A helpful network of persons and organizations will be created and maintained.
4. All participants will be involved in "Knowledge Engineering."
5. A dissemination plan and appropriate materials will be produced.
6. A community education program will be established.
7. A comprehensive assessment plan will be followed.

The major activities reported for staff and students were:

1. Management of materials and equipment
2. Lesson plan development
3. Networking
4. Dissemination
5. Community and parent education
6. Assessment

The major results/outcomes reported for the project were:

1. The development of a "Knowledge Lab"
2. The involvement of many non-science teachers at the site with technology applied to the curriculum
3. A gain in science test scores from pre to post
4. A gain in technology scores from pre to post
5. The development of networking connections with the CTP and other organizations
6. The creation of a staff development model for technology applicable to all subject areas

II. Planning

A. Planning for Project Development

Project TASC II was developed primarily to meet the following needs: to try something new, to increase technology use, to improve student learning and attitude, to bring recognition to the school, to prepare students for college and future employment, to make teaching more exciting, to enhance the curriculum, to facilitate student-centered learning, and to provide for staff development.

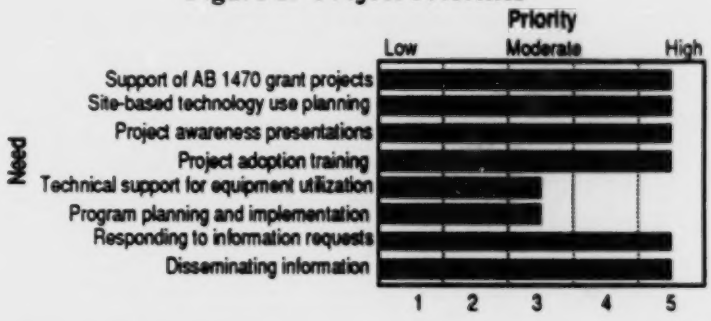
An advisory committee was established for project planning and implementation. The committee was involved in proposal development, project implementation, project marketing and advocacy, project monitoring, and evaluation. Technology use was written into Upland Junior High's existing school curriculum plan. Thirty teachers, ten parents, one school administrator, and one district administrator

were involved in planning and implementing the project. Many other agencies and private businesses were also involved.

> *"Planning was essential in every area of our project. Not only did we need to plan how to implement the project, but we had to have ongoing planning time. Without the project secretary and co-teachers, who provided valuable time for the Director and Technology Specialist to plan necessary presentations, staff development activities, and just the day-to-day 'stuff' that had to be done, we wouldn't have been nearly as effective.*

The project directors were asked to indicate the emphasis given to major educational and program priorities during January 1990 - June 1991. Figure 1 below shows the rating assigned to the different priorities by Project TASC II.

Figure 1: Project Priorities



B. Modifications to Original Proposal Plan

Major changes were made in the project objectives, activities, participants and purchases from what was originally proposed. Because of a lack of sufficient equipment, the project staff felt that teachers were not sufficiently prepared for some of the planned staff development activities, so fewer were scheduled. The number of subject areas emphasized was increased from just science to science, social studies and English-language arts. This was due to the fact that students expressed a desire to use technology in all curriculum areas and that many of the teachers in other subjects were capable of applying technology to the curriculum.

> *"Major changes were made in the project during the 1990-91 school year because of the death of the project director in October. It's hard to continue when something so unexpected happens."*

III. Content

A. Areas of Focus

Science was the major curriculum area addressed by Project TASC II. History-social science, English-language arts, mathematics, foreign language, visual and performing arts, health education, and vocational education were all included as secondary areas of emphasis. The major school-wide area of emphasis was the integration of technology with the curriculum. General technology use and school restructuring received secondary emphasis. Interest and attitude improvement were the major areas of

focus for student process skills with secondary emphasis placed on critical thinking, cooperative learning, and self-esteem.

B. Technology Applications

The major types of technology hardware used in the project were computers, laserdisc players, CD-ROM drives, and telecommunications equipment. Also utilized were video and audio production equipment, high-tech science lab equipment, calculators, and electronic music equipment.

No computers or other technology hardware items were purchased during January 1990 - June 1991. Previously purchased equipment was used for project implementation.

The major types of software used were databases, spreadsheets and other business software, programming languages, interactive instructional software, and cross-curricular units integrating multiple technologies. Word processing, HyperCard, graphics programs, electronic reference, and telecommunications software were also used.

> *"Students can use simulations and create models (genetics, machines, etc.). This would be impossible without technology. As many as thirty different topics can be studied at the same time and not everyone has to do the same thing; technology increases the time on task and generates access to information which can be used to introduce/solve real problems in the classroom."*

The project directors were asked to list the five most widely used software, video, laserdisc, and/or CD-ROM titles and rate the effectiveness of each title in supporting the project's objectives. It was suggested that the project director ask for the opinions of the staff members who most frequently used the products before determining the effectiveness ratings. Project TASC II's self-developed software and videotapes were the most widely used programs. They received a rating of four on a scale of effectiveness ranging from one to five. The other widely used software titles were *Car Builder* from Weekly Reader and *Logo Writer* by LCSI. Both received ratings of four. The most widely used laserdisc was *Dream Machine* by Voyager. It also received a rating of four. *Discovery*, a combined software and video unit from Miliken received a rating of five.

IV. Project Implementation

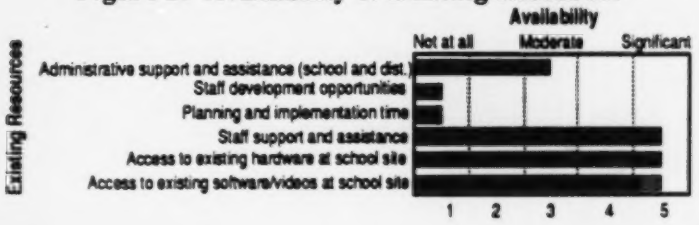
A. Implementation Schedule

Project TASC II was scheduled to begin activities on July 1, 1987, but the project staff decided to begin implementation a month early due to the management and coordination needed. Before 1990, the project was funded through AB 803.

B. Project Management and Implementation Resources

The project director, a classroom teacher, was primarily responsible for project management at the school site. Assistance was received from a school resource person, a secretary, and another teacher. These sources of individual assistance, however, were seldom available to assist in project implementation. The project directors were asked to rate the availability of various resources which were in existence before the start of the project. Figure 2 below shows these ratings for Project TASC II.

Figure 2: Availability of Existing Resources



Project TASC II was highly coordinated with an AB 1470 School-Based Grant project at Upland School District's other junior high school.

C. Staff Development and Technical Assistance

The project director provided the major source of technical assistance. The Director installed and maintained equipment, selected appropriate software, integrated technology with the curriculum, located support resources, evaluated the project, and provided problem solving/trouble shooting services.

Project TASC II conducted a total of 21 workshops between January 1991 and June 1991. Six of these workshops provided technical support to AB 1470 schools, covering such topics as the state curriculum frameworks, elements of the TASC II project, and the use of HyperCard with laserdisc players. A total of 39 educators were trained in these workshops which proved in-depth information and some follow-up. A variety of half-day or less workshops covering topics such as basic project awareness and the use of selected equipment were also conducted. One of these workshops was co-sponsored by IBM. The CTP co-sponsored a two day project awareness workshop and the project's largest workshop, which had 100 participants was conducted in conjunction with the CDE. Information was not available on workshops conducted during 1990.

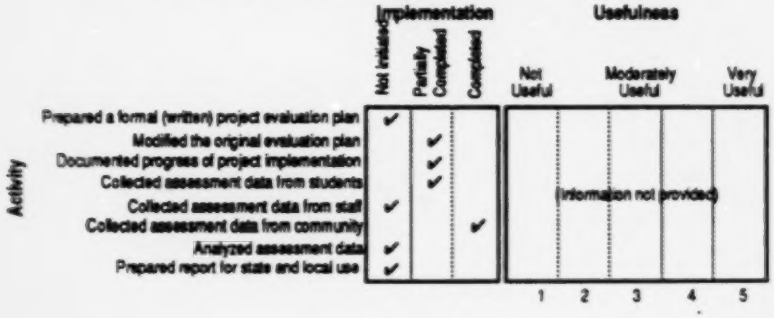
> *"What was needed was for the science teachers to take the time to immerse themselves in technology. You cannot do it unless you literally 'live' it.*

A total of eleven (52%) workshops provided in-depth information on the project, five included Project TASC II awareness presentations, and seven provided follow-up assistance. Four of the workshops covered locally initiated topics.

D. Evaluation Procedures

Projects were asked to state the level of implementation and rate the usefulness of a series of evaluation activities. Figure 3, on the following page, depicts this information for Project TASC II.

Figure 3: Implementation of Evaluation Activities



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The project evaluation plan, though not formal, included on-going assessment activities (formative evaluation) and the plan was modified from what was stated in the proposal. The project director and a contractual consultant were primarily responsible for the evaluation. The quantitative data sources used included computerized pre-post tests of science and technology skills. The qualitative sources used were portfolio assessment, teacher assessment of student work, classroom observations, teacher interviews, and incidental comments by students and staff. No formal evaluation was conducted of the project's workshops or any of its other services. Instead, the workshops, which were usually conducted for very small groups of teachers, were interactively altered to fit the needs of the individual participants.

> *"Because of my inexperience in evaluation," commented the new project director this year, "I did not do any formal evaluation activities, other than daily course assessments and corrections. If I had known that the project director was going to die, I would have taken an evaluation workshop."*

E. Extent of Implementation

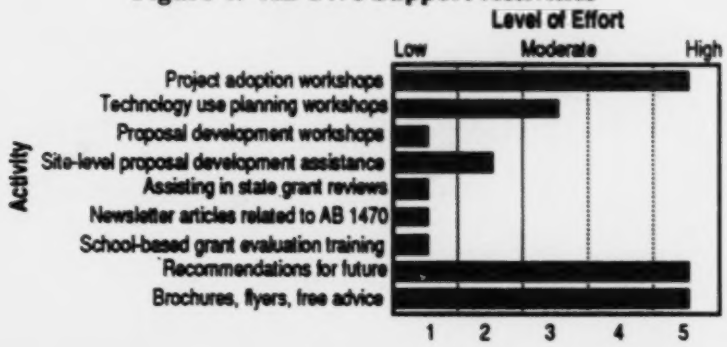
The original project activities, as outlined in the proposal, were partially completed and will be continued in 1991-92.

Among the activities to be continued were: management of equipment and instructional materials, lesson development, "knowledge engineering," parent education exchanges, business exchanges, assessment, and networking.

F. Staff Activity

Figure 4 shows the estimated level of staff effort dedicated to each of the project's activities which supported AB 1470 School-Based Grant projects.

Figure 4: AB 1470 Support Activities



The project director estimated the greatest proportion of director time (25%) was spent on project planning and management. Significant amounts of time were also spent preparing dissemination materials and providing assistance and training to adopters.

Table 1 shows the estimated number of publications produced by Project TASC II.

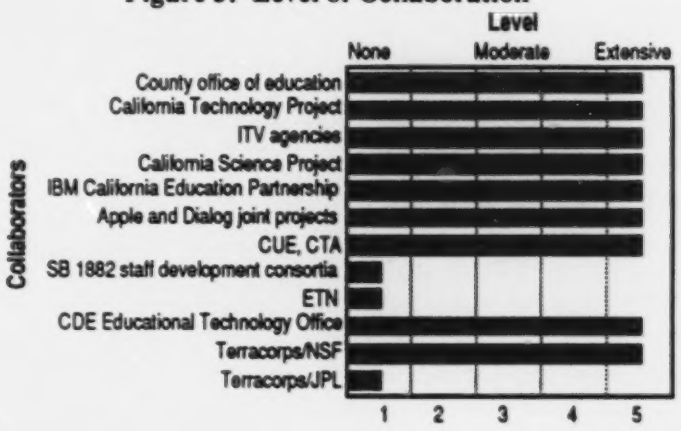
Table 1: Project Publications

Publications Produced or Distributed by Project	Number of Publications	Number of Copies Printed
Announcements, Brochures, Flyers	1	1,000
Books	8	192
Journal articles	2	unknown

G. Collaboration with Other Agencies

Project TASC II collaborated with a wide variety of other projects and agencies. Among the ongoing resources listed were the county office of education, the California Science Project, the CTP, the ITV agencies, and the CDE's Office of Educational Technology. Extensive conference presentations were conducted in conjunction with Computer-Using Educators (CUE), a Science Conference at Asilomar, and the CTA. Equipment and training were received from the IBM California Education Partnership and the project was involved in meetings and product production. Other industry partnership activities included collaborations with Apple and Dialog. The project collaborated extensively with Project Terracorps, which is funded by the National Science Foundation (NSF) and the Jet Propulsion Laboratory (JPL) and is also located in the Upland School District. Figure 5 shows the project director's ratings of the level of collaboration with each agency.

Figure 5: Level of Collaboration



H. IBM California Education Partnership

Project TASC II has received equipment, software and training from the partnership and will be using it to produce products, instruct students, and conduct research and development. The IBM equipment will be used in all subject areas.

The project director had previous experience with IBM equipment including teaching a graduate course in computer science at Scripps College. IBM provided additional training in the use of Linkway and set up the equipment at Upland Junior High.

The primary benefits foreseen are the availability of high quality equipment and software.

V: Project Dissemination

A. Marketing Efforts

Project TASC II began dissemination activities in October of 1988.

> *"Having visitors come to our site seemed to be the best vehicle for marketing our project because we were able to communicate* directly *with them."*

Figure 6 shows the effectiveness of various means for stimulating awareness of the project, as rated by the project director. No means of marketing the project was found to produce a significant increase in project awareness.

Figure 6: Impact of Various Marketing Methods

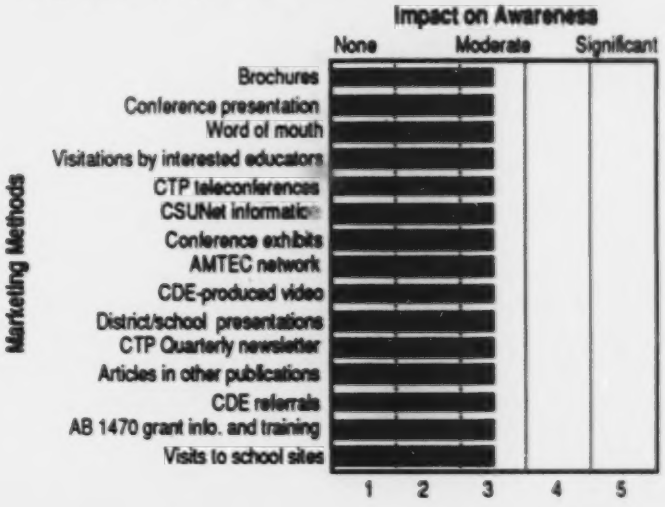


Table 2 shows the number and cost of products produced for the dissemination and adoption of Project TASC II between January 1990 and June 1991.

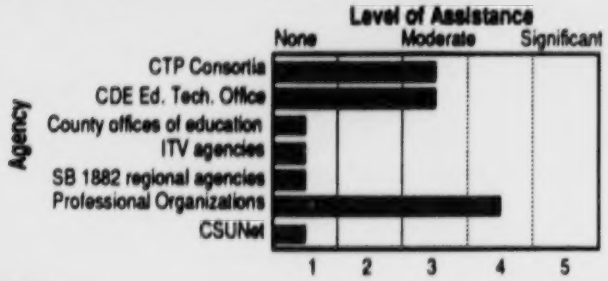
Table 2: Dissemination Products

Products	Quantity Produced	Cost
Project-specific brochures	unknown	$4,000
Contribution to AMTEC brochures	unknown	$80
Training guides	50	$100

In addition to the development and distribution of publications the project conducted a variety of dissemination activities including four conference presentations, ongoing individual contacts, fifteen sites visitations, and a district presentation.

The projects were asked to rate the support systems that actively helped disseminate information and training. Figure 7 shows the level of assistance provided by these services to Project TASC II.

Figure 7: Dissemination Support Services



B. Dissemination Evaluation

An informal qualitative assessment of the impact of dissemination activities was performed using incidental comments from teachers. No results were provided by the project director.

C. Adoption/Adaptation

No minimum criteria have been established for projects in order for them to be considered adoptions of Project TASC II. The Director states that the smallest effort in implementing technology use will be assisted and that most adoptions are far from complete.

The specific elements of Project TASC II that were adopted most often were:

- Apple IIe presentation system
- Laser disk player used with purchased HyperCard stacks
- Laser disk player used with teacher-produced HyperCard stacks

The project does not establish formal agreements with adoption sites regarding the implementation of the minimum criteria or use of specific services. However, a variety of activities were performed to evaluate the extent of adoption at the various sites. Project TASC II conducted site visits of thirty adopters and maintained telephone contact with them for evaluation and monitoring purposes. A survey was not conducted to determine the extent of adoption.

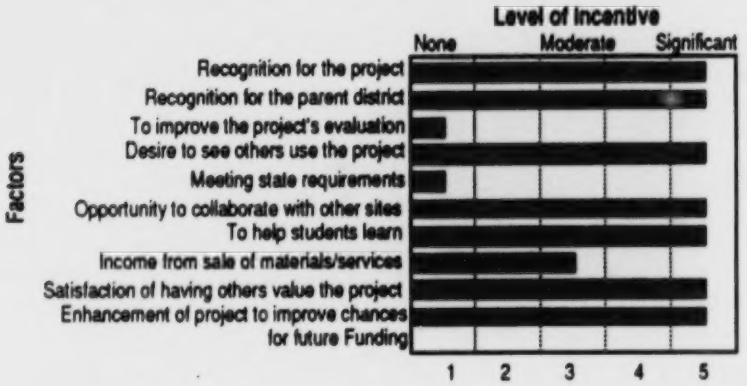
In all, 23 sites were listed as adopters of Project TASC II. Of these, 8 (35%) were AB 1470 School-Based Grant recipients. Three were provided with formal on-site training and follow up, with the remainder receiving only telephone contact except for one which received an informal on-site visit. The level of adoption was unknown for most of the projects. Four were reported as having at least one major project element in place. Of these, two were stated to have replicated most major elements of Project TASC II. These projects were all AB 1470 grant recipients. Two other AB 1470 projects had minimal adoption involvement. Three projects were known to be exemplary adoptions, suitable for visitation by other educators and one was definitely not an exemplary adopter. Most major elements of Project TASC II have been replicated at Pioneer Junior High School, an AB 1470 grant recipient also in the Upland School District.

The project director was asked to indicate the degree to which several factors served as incentives for them to encourage other districts/schools to adopt or adapt the project.

> *"It's really hard to tell how effective we have been. When you inspire people, it does not always give them enough steam to follow through."*

Figure 8 shows the ratings supplied by the director of Project TASC II.

Figure 8: Incentives to Disseminate Project



VI. Project Support Resources

A. Services

The Upland School District assigned a part-time employee to assist with Project TASC II, starting in March, 1991.

VII. Funding Support

A. Funding Sources

Information was not provided on direct project funding.

In-kind support consisted of $72,800 worth of hardware and software received from IBM, Apple, Cal Poly Pomona, and parent donations.

B. Project Expenditures

Information was not provided on project expenditures.

VIII: Supporting and Impeding Factors

A. Facilitating Factors The guidelines and expectations of the CDE, help from technology manufacturers, assistance from colleges and universities, and partnerships with business and industry were found to be moderate facilitating factors.

B. Impeding Factors The major impediments to project implementation were insufficient funding from AB 1470, lack of staff to provide professional development, and lack of knowledge of effective dissemination strategies. The lack of a geographically defined area to serve was seen as a moderate impediment. Packaging materials for dissemination and incentives to disseminate outside the district had a slight impeding effect on the project.

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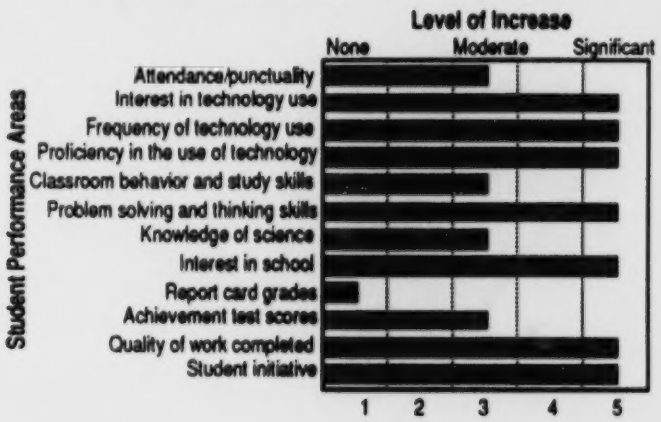
IX: Project Outcomes

A. Student Outcomes

Findings from the Self-Assessment Inventory: Project TASC II met all of its student objectives. The project director was asked to rate the observed changes in students participating in project-related instructional activities. The most significant improvements noted were in interest and attitude, proficiency in the use of technology, problem solving skills, and the quality of work completed. The project was not reported by staff to have an observable effect on student report card grades. Figure 9, below, shows the extent to which the project increased student performance in a variety of areas.

Figure 9: Effects of Project on Students



The project director stated: "Students move from being dependent upon teacher-directed activities to being young people who can determine their need to know and who can identify and use resources which will contribute to their own knowledge and skills." The project staff reported that important benefits for students were attained and worth the effort.

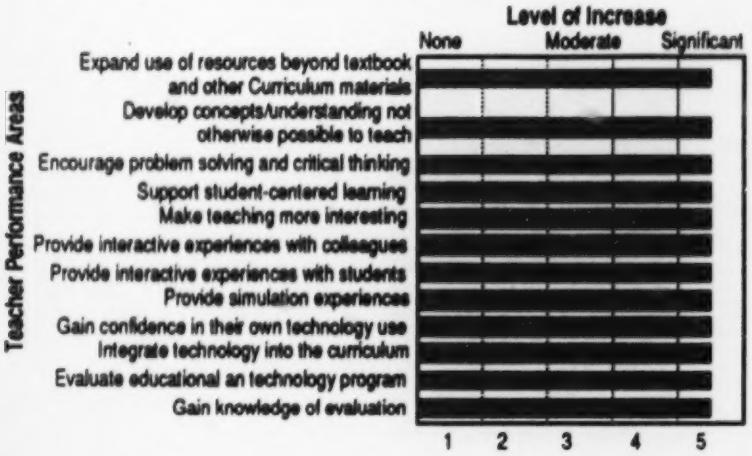
> *"Scott was shy and stuttered when he spoke. He took Mr. Koepke's science classes, as well as the introductory and advanced computer classes during seventh and eighth grade. He became very interested in the camcorder and with a lot of practice became an expert. He learned how to interface titles from the computer onto his videos. He returns now, from high school, to teach the computer club students how to edit videos. He is so different from that shy, quiet boy of several years ago. And he doesn't stutter any more."*

Findings from the Student Surveys: No student survey data is available from Upland Junior High School. The project director did not administer the student surveys.

B. Staff Outcomes

Project TASC II met its staff development objectives only in areas other than science, which was supposed to be the focus of the project. The projects were asked to rate observed degree of change in teachers as a result of the staff development activities. As demonstrated in Figure 10, teacher performance in all areas was found to be greatly improved due to the training provided by the project.

Figure 10: Effects of Project on Teachers



Teacher performance was improved by supplying equipment, training, and time to learn and teach with a co-teacher in the classroom. Overall, the project caused a significant increase in staff usage of technology in the classroom for non-science teachers and caused a slight increase for science teachers. Important benefits for teachers, which probably would not have occurred without the project, were attained and clearly worth the effort in staff development.

> *"This project really forced teachers and students, together, to apply their talents and skills to a plethora of daily problems, just to get the technology up and running. When we were inadequate, we were able to find a way through each other's experiences. We had to learn how to work together."*

C. Program Outcomes

Project TASC II stimulated a significant increase in staff familiarity with and use of the state curriculum frameworks. A significant improvement was also noted in the management and coordination of learning resources. No aspects of the project were incorporated into the School Improvement Plan but some elements of the project are likely to become institutionalized and continued at the school. Multiple additional uses of technology have occurred at Upland Junior High due to Project TASC II, including the application of technology to all subject areas. One way in which the project has had an impact on the school program is in causing people to think about technology and to discuss its potential uses. The desire to use technology has increased greatly.

D. Impact of Services

The project directors were asked to rate the perceived effectiveness or value to participants of each service offered by the project, see Figure 11 on the following page. Additionally, they were asked to rate the perceived need for increased services. Informal comments made by participants were used to rate the effectiveness of the various services. It is anticipated that district staff will form a team to conduct in-services in 1991-92.

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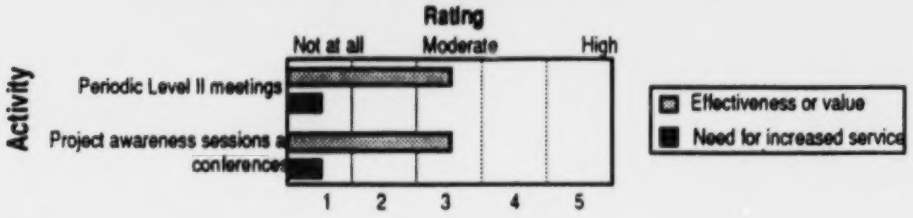
Figure 11: Effectiveness and Need for Services



E. Cost Benefits

Given the objectives and expectations of Level II MTS project dissemination, the project director believes that the funding level for the project has been somewhat insufficient. It would have been impossible for the project to accomplish what it has achieved without the existence of in-kind contributions and volunteer assistance. If AB 1470 funding were terminated, all out-of-district services would have to be terminated and the project would not apply for other funding to continue. In general, the project director believes that the Level II dissemination model is a cost-effective approach to providing information and training on exemplary models to other districts.

F. Unanticipated Outcomes

Among the unanticipated findings encountered by project staff were:

> *"Students do not always choose computers as the preferred tool. One good student, after learning how to use Cricket Graph commented, 'Big deal!' and got out her colored pencils; she drew a beautiful circle graph by hand."*

1. Students sometimes do not choose technology as the preferred tool.
2. Students who use on-line databases have a different outlook on learning and school.
3. Teachers have highly individual needs.
4. Simple presentation equipment is needed and is used heavily when available.
5. Dissemination takes place best away from the school site.
6. Available technologies need to be improved for school applications.
7. Administrators need awareness level staff development on the potentials of technology to improve student learning.

> *"Teachers are very creative about drawing on their own resources to solve problems. For example, the English teacher did not have the requisite RF box to run the wonderful Apple IIe science disks from the computer to the classroom television monitor so all the science students could view at the same time. She figured out, by herself that it would work if she ran her cables through the VCR."*

X: Recommendations

The following recommendations were given by project staff:

1. All subjects should be included in the project.
2. More district involvement is needed.
3. More local participation is needed.
4. More in-services and workshops are needed in conjunction with a staff development team.
5. Additional funding is needed.
6. Increased collaboration is needed with the California Technology Project.
7. Outside help is needed for evaluation.

> *"Teachers have their own personal predilections and should choose technologies according to their needs and their students' needs."*

Project LINKS

"Teachers make work fun here and I'm glad I get to come to this school," commented a first grade student, referring to Project LINKS' computer/writing lab. "I like to learn, to write, to read. Computers give me a chance to think." A sixth grader, expressing virtually the same sentiment, but from the opposite side of the fence, said, "I don't want to leave here. We finally got all this equipment [points around the computer lab] and now we have to leave."

Linking is the name of the game at Laguna Road Elementary School. When designing the project, almost all teachers in the school were in concert in their desire to link students to computers; language arts teachers, because of their recent involvement in the California Literature Project, wanted to link students to the writing process. As the project director stated, "Applying to be a Level II Model Technology School was perfect because it created cohesiveness to the two. What we did was link the two objectives together." They also expanded their focus to include all of the language arts curriculum, using technology as a support to link to the state curriculum frameworks. "It's been the perfect bonding," stated one of the teachers. "And at the heart of it all has been student learning. We wanted to enhance and extend student learning."

The school now boasts a fully equipped computer lab, at least one computer, printer, VCR, and monitor in every classroom, and video/camcorder units in every fourth classroom. Teachers' use of equipment as part of their daily program has significantly increased as a result of conscientious staff development and training. Technology use and application increases each year, and student interaction with language has increased steadily, clearly demonstrated through portfolio collections and CAP writing scores. Both the project director and the principal attribute LINKS' success to the effort that has been expended by teachers and the high expectations of the community. As the principal commented, "Implementing a project like this requires a lot of tireless effort. Our staff is one of the best: teachers are willing to work hard here. Our superintendent also believes strongly in what we're doing." Obviously, judging from student comments, the 'link' has been made joining learning, technology, and curriculum together.

I. Background Information

A. Project Background

Project LINKS is a literature-based integrated language arts program which developed materials for students in grades K-6. All students read significant literary works in a variety of genres and write in response to the literature using personal experiences. The computer is used as a tool in writing and for publishing student work. In addition, the computer is used to facilitate real-life activities, such as the research done in National Geographic Kids Network. All 4th, 5th, and 6th grade students participated in 1990-91. The video network is especially useful for providing authentic learning experiences when students present live news broadcasts, teleconferences, and public information broadcasts.

B. Development/Demonstration Site Demographics

The project development/demonstration site for Project LINKS is Laguna Road School in the Fullerton School District located in Fullerton – a predominantly urban area. Laguna Road's 1990-91 enrollment was 654 students in grades K-6 and it employed twenty-seven teachers. The ethnic make-up of the school was predominantly Caucasian (43%) and Asian (38%) with some Hispanic (18%). Black,

Filipino, and Pacific Islander students together make up about one percent of the enrollment. In addition to Laguna Road, four other schools in the district received services and technology-based resources from the project.
During the January 1990 through June 1991 funding period, Project LINKS directly served 654 students in grades K-6. Nineteen percent of the students were enrolled in GATE, 15 percent were enrolled in bilingual and ESL programs, and 7 percent were special education students.

C. Project Description

The major objectives and expected outcomes of Project LINKS were:

1. Provide awareness activities, support applications for prospective adopters during the grant preparation period for years one and two of the AB 1470 School-Based Educational Technology Grants.
2. Provide planning, implementation and evaluation support to funded districts and school which adopted the project.
3. Design and implement a project technology center to support project activities.
4. Provide project management that would insure that project activities were completed and data collected to support project evaluation.

The major activities reported for staff and students were:

1. Conduct a set of awareness workshops throughout the state in spring of 1990.
2. Distribute project brochure and materials through the state.
3. Conduct two grant preparation workshops.
4. Hold visitations and demonstrations at the project site.
5. Conduct three-day seminars for project adopters on the project site with follow up and evaluation assistance.
6. Provide consultations for adopters and others.
7. Conduct workshops and demonstrations at adopting sites.
8. Provide project updates through regular newsletters for adopting schools.
9. Complete and implement technology center on project site.
10. Student activities included teleconferences, news broadcasts, participation in classroom demonstrations, and creation of publications such as newsletters, student books, and poetry.

The major results/outcomes reported for the project were:

1. The project was able to meet all of its objectives, although follow-up activities for adopting schools were limited by the unexpectedly large number of adopters.
2. During the first two years of AB 1470 school-based grants, 59 schools elected to adopt Project LINKS. Of this number, approximately 90% expected and received services. The remaining 10% did not respond to project correspondence or other contacts.
3. Three three-day seminars were held and workshops and demonstrations were provided for approximately 15% of the adopting schools at their sites.
4. Implementation and evaluation consultation were provided on request.
5. A newsletter was maintained for adopting schools.
6. A pre-service session was provided for teachers from California State University, Fullerton.
7. Demonstrations and tours were conducted for conferences such as the California Reading Association, the National Council of Elementary School Principals, and others.

8. The site technology center, which hosts training sessions for the Fullerton School District and others, was completed and utilized.
9. A training session for the technology cadre of the California Literature Project (CLP) was co-led by Project LINKS and Project FUTURE. A video sponsored by the CLP and the California Department of Education was co-produced by Project LINKS.
10. Project management activities were completed.

II. Planning

A. Planning for Project Development

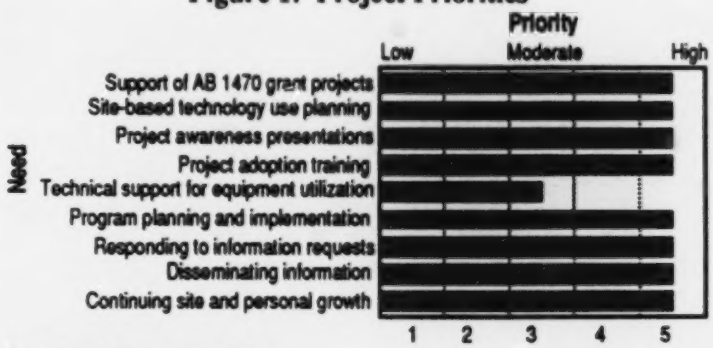
Project LINKS was developed primarily to meet the following needs and interests: to explore an interest in technology, to gain additional funding for the school, to increase technology use, to improve student learning and attitude, to simulate restructuring, to make teaching more exciting, to enhance the curriculum, to facilitate student-centered learning, to acquire equipment, to provide for staff development, and to implement the English-Language Arts Framework.

The School Site Council, the School Leadership Team and a committee established for the project were all involved in the planning process. The planning committee was involved in proposal development, project change advisement, and project advocacy. A technology use plan was developed for the project and integrated into the existing school plan. Twenty-eight teachers, five parents, one school administrator, four classified staff members, four district administrators, and one consultant were involved in planning and implementing the project.

> *"We thought that the most important thing at the beginning of the project would be staff development. Surprisingly we were wrong. Although extensive staff development was important, it was the collaboration, our meeting and talking, that was the driving force."*

The project directors were asked to indicate the emphasis given to major educational and program priorities during January 1990 - June 1991. Figure 1, below, shows the ratings assigned to the different priorities by Project LINKS.

Figure 1: Project Priorities



B. Modifications to Original Proposal Plan

Major changes were made in the project activities, participants and purchases from what was originally proposed. The implementation of some activities was delayed by the fact the technology demonstration center was not ready for use until January of 1991. Delays were also caused by the late arrival of

equipment from IBM in May of 1991. The number of teachers participating in the project was greatly increased due to the larger than anticipated number of adopters. Two CD-ROM players and two Macintosh LC computers were purchased to support new language arts software.

III. Content

A. Areas of Focus

English-language arts was the major curriculum area addressed by Project LINKS. History-social science, mathematics, science, visual and preforming arts, and physical education were also included as a secondary areas of emphasis. The major school-wide areas of emphasis were general technology use, integration of technology into the curriculum, school restructuring, professional development, and school climate improvement. Critical thinking, cooperative learning, self-esteem, and interest/attitude were the major areas of focus for student process skills with secondary emphasis placed on study skills.

B. Technology Applications

The major types of technology hardware used in the project were computers, laserdisc players, instructional television, audio/video production equipment, telecommunications, and a video network for live broadcasting. Also utilized were cable television, and CD-ROM.

Fourteen computers were purchased by the project since January 1990, including twelve Apple Macintosh SE 20s and two color Macintosh LCs. Other computer equipment purchased included two Apple CD-ROM drives, two Pioneer laserdisc players, an Apple laser printer, three dot-matrix printers. Also purchased were a large screen monitor and a Panasonic video editor.

> *"My favorite thing is to hook the computer to the television monitor. Today, for example, we worked in groups and wrote thank-you notes to the visitors that were here the other day. We look to find the missing pieces, and revise. Students know what revision means ."*

The major types of software used were word processing/desktop publishing, interactive instructional programs, and telecommunications software. HyperCard, graphics, electronic encyclopedia, database, spreadsheet, and school management programs were also used by Project LINKS.

The project directors were asked to list the five most widely used software, video, laserdisc, and/or CD-ROM titles and rate the effectiveness of each title in supporting the project's objectives. It was suggested that the project director ask for the opinions of the staff members who most frequently used the products before determining the effectiveness ratings. Four of the five titles listed received scores of five on a scale from one to five. These programs were *Microsoft Works, Beaglewrite* by Beagle Brothers, *Children's Writing and Publishing* by The Learning Company, and *VCR Companion*, a combination of computer software and video by Brøderbund. Another program, *8-16 Paint* received a rating of three, but it is expected that it will become more effective in the future.

IV. Project Implementation

A. Implementation Schedule

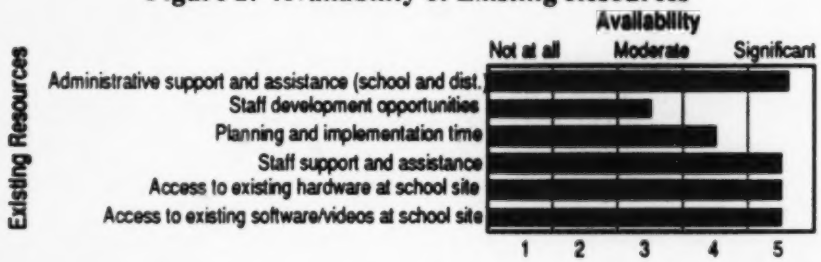
Project LINKS began activities funded by AB 1470 on January 1, 1990, as scheduled in the proposal. The only delay encountered was in the implementation of the technology center. The building was not ready to occupy until January 1991. As a result, staff were unable to present activities as smoothly at the

seminars presented in October and December as they were at those after January when the center was complete.

B. Project Management and Implementation Resources

The project director, a classroom teacher, was primarily responsible for project management at the school site. Assistance was received from a district resource person, the California Technology Project (CTP), the Academic Model Technology Consortium (AMTEC), and the CDE's Office of Educational Technology. These sources of individual assistance were usually available to assist in project implementation. The project directors were asked to rate the availability of various resources which were in existence before the start of the project. Figure 2 shows these ratings for Project LINKS.

Figure 2: Availability of Existing Resources



Project LINKS was coordinated extensively with the School Improvement Program, the bilingual program, GATE, and regular classroom instruction.

C. Staff Development and Technical Assistance

The Fullerton School District and AMTEC provided the major source of technical assistance. The types of help received included installation and maintenance of equipment, problem solving and trouble shooting, and assistance in finding additional resources.

> *"We thought we needed to spend a good deal of time on staff development when we first started this project to be effective. Surprisingly, we were wrong. What really worked was the collaboration, our meeting and talking."*

Project LINKS conducted a total of 41 workshops between January 1990 and June 1991. At least twenty of these workshops were to assist AB 1470 school-based grant recipients, including three three-day seminars for adopters held at the project site. Eight one-on-one training sessions were conducted for individual adopters. Three of the AB 1470 support workshops were co-sponsored by the CTP and AMTEC. Awareness presentations were conducted at a variety of regional and state-wide conferences, including the 1990 Association of California School Administrators (ACSA) conference, CDE-sponsored Language Arts Conference, Exemplary Practices Conference, California Reading Association Tour, Open Gate Conference, and both the 1990 and 1991 San Gabriel Technology Conference which were sponsored by AMTEC. Presentations were also done at two California Literature Project workshops. Ten training sessions on the use of Macintosh computers were conducted for other teachers in the Fullerton district.

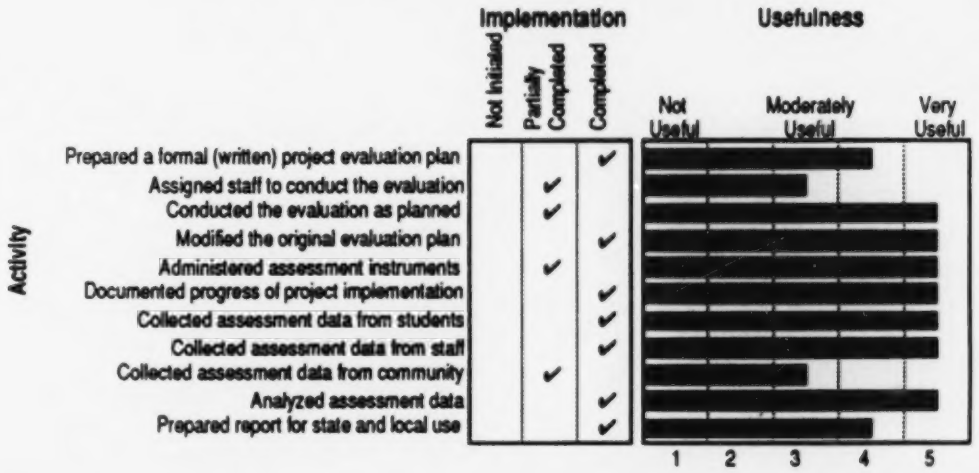
> *"We're getting lots of referrals now. Schools are referring other schools, even within our own district."*

Twenty (49 %) of the seminars provided basic awareness information on the project and ten (24 %) provided in-depth information.

D. Evaluation Procedures

Projects were asked to state the level of implementation and rate the usefulness of a series of evaluation activities. Figure 3, below, depicts this information for Project LINKS.

Figure 3: Implementation of Evaluation Activities



The project evaluation plan included on-going assessment activities (formative evaluation) that were implemented as stated in the proposal. The project director, school staff, and the director of the California Literature Project were primarily responsible for the evaluation. The quantitative data used to evaluate the project included standardized achievement tests, California Assessment Program (CAP) results, CAP writing results, portfolio assessment, student surveys, teacher surveys, and records of computer use. Qualitative sources included: student self assessments, portfolio assessment, student interviews, student journals, teacher assessment of student work, classroom observations, teacher interviews, workshop evaluation, changes in school plans, and incidental comments by students and staff.

> *"Testing doesn't adequately measure what we need to measure here," indicated the principal. "Video-taping students at work and peer evaluation, for example, are much more effective assessment methods. We've tried to use a variety."*

Project LINKS was described in the Self-Study prepared for the April 1991 school review as the major factor in the changes in language arts and technology that have taken place on the site. The school received three commendations from the review team. All of them were related to the project: 1) language arts; 2) planning, implementation and evaluation; and 3) social studies. The focus on meaning-centered literature-based instruction, student and teacher collaboration, interdisciplinary instruction, and technology enhancements were among the outstanding features resulting from the project.

> *"We all hate doing these things [evaluations], but when we're finished, we're glad. We think of our project differently."*

The most significant exemplars reported in the Self-Study were full framework alignment in language arts; the literature base in language arts; writing in response to text; instruction and learning across the curriculum; site-based decision making, curriculum planning and evaluation; and technology use within the regular curriculum in situations designed to encourage critical and creative thinking.

Formal evaluations were conducted of the impact of project adoption workshops, AB 1470 proposal writing workshops, and other AB 1470 project assistance. Reports on project activities were submitted orally and in writing to the staff of the CETAP project. The amount of time required for project activities did not allow for formal evaluation of publications, telephone assistance, and other activities.

> *"We put on a mini-institute for a school where my daughter teaches. Ten teachers attended and reported back to their school that we were doing a terrific job, using a lot of technology and enabling students to do some remarkable things. One of the teachers even said she wanted to teach here someday!"*

E. Extent of Implementation

The original project activities, as outlined in the proposal, were completed as planned.

F. Staff Activity

The project director estimates that she spends the greatest portion of her time (35 %) assisting AB 1470 School-Based Grant projects. She devotes twenty percent of her time to project management and another twenty percent to providing assistance and training to adopters (mostly AB 1470 grant recipients). The project employs a part-time clerk. Teachers who conduct demonstrations spend about twenty-five percent of their time assisting adopters and other AB 1470 projects. Other project staff spend about ten percent of time on project activities. This is in addition to regular teaching activities.

Table 1 shows the estimated number of publications produced by Project LINKS. An initial mailing of workshop schedules and awareness brochures was sent 1,300 school districts.

Table 1: Project Publications

Publications Produced or Distributed by Project	Number of Publications	Number of Copies Printed
Workshop Schedules	6	60-1,300 per publication
Project Newsletters	5	400
Announcements, Brochures, Flyers	5	60-1,300 per publication
Between the Rock and a Hard Place (Document of change)	1	100
Adoption Notebooks	1	80

G. Collaboration with Other Agencies

Project LINKS collaborated with a wide variety of other projects and agencies. The Fullerton School District and Orange County Office of Education initiated tours of the project site. The California Technology Project (CTP) coordinated awareness sessions and assisted with travel arrangements. Telecommunications of Orange County (TOC), the local ITV agency, provided materials for project workshops. Project LINKS collaborated with Project FUTURE and the California Literature Project to

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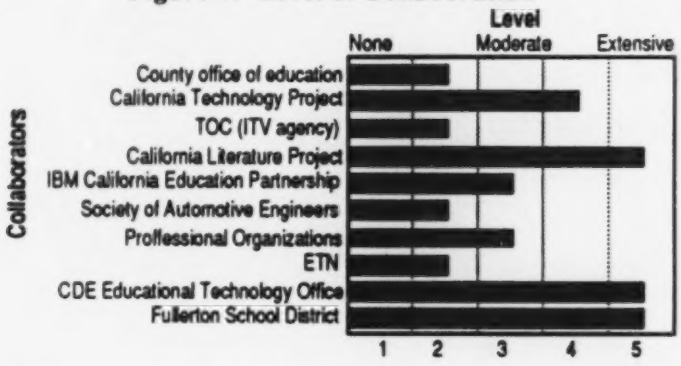
conduct a technology seminar and to produce a video tape for the CDE. Activity with the IBM California Education Partnership was delayed until May 1991 due to the late arrival of equipment. A partnership was formed with the Society of Automotive Engineers with activities to begin in Fall of 1991. Project LINKS participated in an Educational Telecommunications Network (ETN) teleconference. Ongoing consultation and support were received from the Educational Technology Office of the CDE.

> *"We worked extensively with the California Literature Project, the CTP, and CDE. Oh, my yes! We kept them very actively involved with us. We recommended similar involvement to many of the visitor schools."*

Figure 4 shows the project director's ratings of the level of collaboration with each agency.

Figure 4: Level of Collaboration



H. IBM California Education Partnership

Project LINKS will use the IBM equipment to provide authentic learning experiences for students and to support classroom instruction and learning. The staff expect to work with LINKWAY to explore its classroom applications for teachers and students.

Five members of the project staff have attended two days of LINKWAY training. IBM installation staff from Photo and Sound have installed ten computers. However, there are still some problems with the audio and video applications and the Spanish Language IBM software. Also, the CD-ROM player is not working. The Photo and Sound staff are expected to return and complete the installation. The project director worked with the installation staff to learn the basics of MS-DOS for the use of the equipment.

> *"I'm not sure I mentioned the extensive staff development activities that will be necessary to implement the IBM partnership agreement. We are totally unfamiliar with the equipment and will need to provide extensive opportunities for staff to become familiar with it."*

The IBM computers are expected to be very useful in student publication activities using third-party software such as *Microsoft Works* and *Children's Writing and Publishing Company*. The equipment also will serve the project by providing access to software and multimedia applications yet to be developed that are unique to IBM. Though time will be needed to learn and practice, the staff are convinced of the benefits of a hybrid lab – computers of varied kinds that provide maximum flexibility

for developing effective classroom applications. Staff look forward to the use *Compton's Multimedia Encyclopedia* and other research software to support student research, writing and publication.

V. Project Dissemination

A. Marketing Efforts

Project LINKS began dissemination activities in January of 1990. Figure 5 shows the effectiveness of various means for stimulating awareness of the project, as rated by the project director.

Figure 5: Impact of Various Marketing Methods

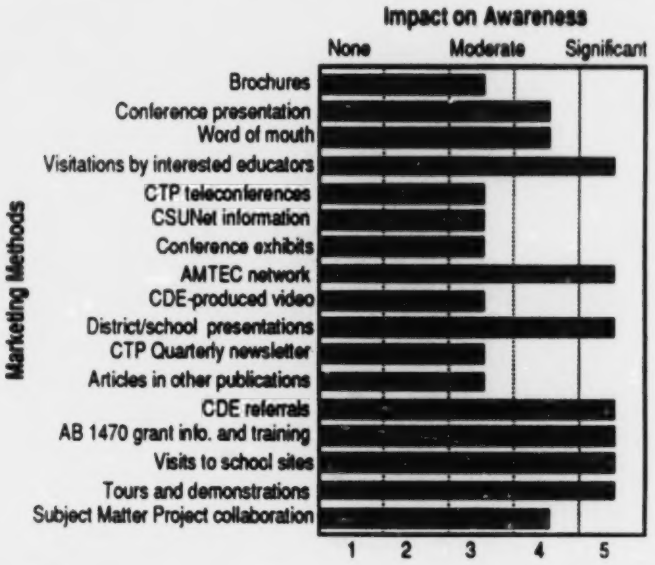


Table 2 shows the number of products produced for the dissemination and adoption of Project LINKS between January 1990 and June 1991.

Table 2: Dissemination Products

Products	Quantity Produced	Cost
Project specific brochures	2,500	(Information not Provided)
Contribution to AMTEC brochures	1,000	
Computer disks of instructional plans	35	
Training guides	80	
Supplemental training materials	1,000	
Between the Rock and a Hard Place (Document of change)	100	

In addition to the development and distribution of publications the project conducted a variety of dissemination activities, including: two teleconferences, ongoing individual contacts, nine formal regional workshops, two district presentations, monthly site visitations, twelve visits to adopter sites, 31 seminars with and average of 30 participants, ten conventions, including one at the project site, and three tours of the site. During the AB 1470 grant preparation period, approximately 250 phone calls were received within three months.

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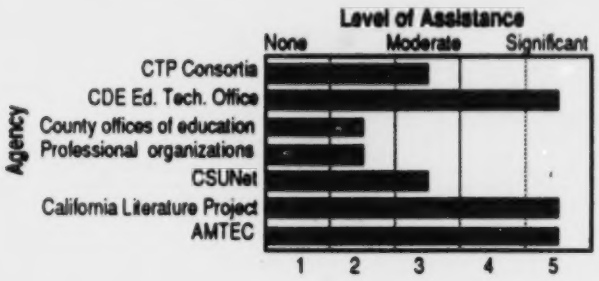
> *"People who visit are particularly interested in what they see happening in the classrooms. They comment that the greatest value in the use of technology is in the 'doing' rather than the 'products.'"*

The projects were asked to rate the support systems that actively helped disseminate information and training. As shown in Figure 6, significant assistance was provided by the CDE, the California Literature Project, and AMTEC.

Figure 6: Dissemination Support Services



B. Dissemination Evaluation

An assessment of the impact of dissemination activities was performed using evaluation forms distributed at staff development sessions. However, an end-of-project evaluation was not conducted.

C. Adoption/Adaptation

The minimum criteria that must be met for a project to be considered an adoption of Project LINKS are:

1. Staff development for teachers in framework alignment and technology use
2. Collaboration of students in learning activities and teachers in planning, coaching and evaluation
3. The use of a meaning-centered literature-based program that integrates reading, writing, listening, and speaking
4. The use of logs and journals for student response to literature
5. The use of computers as a resource for student activities related to the process of writing
6. Partnering of classroom computers with those in a computer lab to support the classroom program
7. The use of technology resources to provide authentic learning experiences for students
8. The use of video (if available or part of the adoption) to provide common information and ideas related to language arts and content instruction and learning

The specific elements of Project LINKS that were adopted most often were:

1. A literature-based program
2. Staff development for teachers in technology
3. The use of computers as a resource for student activities related to the process of writing

4. The use of specific software programs that support authentic activities for students
5. The use of logs and journals
6. Some level of collaboration for teachers and/or students
7. Video used as a resource in some way

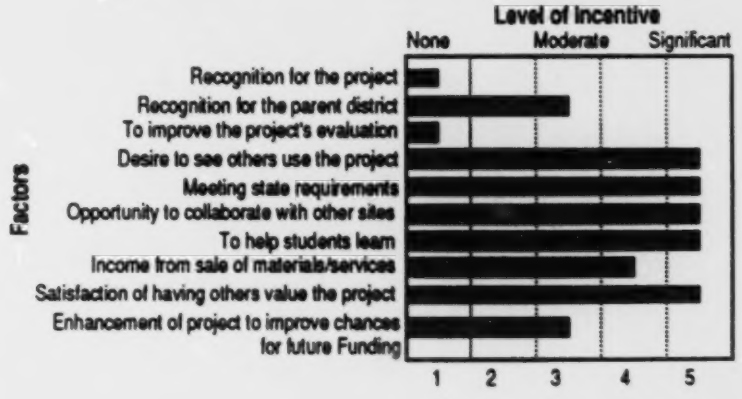
An attempt was made at establishing formal agreements between the project and the adoption sites regarding implementation of minimum adoption criteria and services to be provided by Project LINKS. An agreement was prepared and distributed to adopters but none responded. However, some documentation of adoption does exist. Project LINKS helped 23 AB 1470 projects to design evaluation plans. Fifty-nine sites received follow-up telephone evaluation and monitoring from the project and were asked to provide written documentation or evidence of adoption.

> *"We were underfunded, primarily due to the unexpectedly large number of adopting schools and the addition of the IBM partnership. In addition, it seems that we seriously underestimated the costs for a lot of our expenses, such as mailing, faxing, phone calls, clerical help, etc. Long distance phone consultations particularly took up a big chunk of money."*

In all, 57 sites were listed as adopters of Project LINKS. All were AB 1470 School-Based Grant recipients; 36 were 1989-90 projects and 21 were 1990-91 projects. Nine were provided with formal on-site training and extensive follow up, 22 (39 %) received formal on-site training with minimal follow up, ten received informal or on-site contact, and the remaining 16 received telephone contact only. The extent of adoption was only know n for nine of the projects. Of these, eight had most major elements of Project LINKS in place and one had only minimal involvement. The project director cited lack of time and money as the reasons for not conducting the visits and consultations needed to evaluate the adopters. She believes, however, that most of the projects that had received at least some on-site training have successfully adopted one or more elements of Project LINKS. The most difficult element to assess in the adoptions was framework alignment, which could only be determined through classroom visits and interviews. Adopting schools did not necessarily adopt both the computer program and the video program. The project director will be conducting additional telephone follow-up and will visit some of 1990-91 adopters in the Fall of 1991.

The project director was asked to indicate the degree to which several factors served as incentives for them to encourage other districts/schools to adopt or adapt the project. Figure 7, below, shows the ratings supplied by the director of Project LINKS.

Figure 7: Incentives to Disseminate Project



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VI. Project Support Resources

A. Services

All district staff assists with project activities when required. The district staff served as a significant source of assistance for planning and implementing the project. The most significant sources of external support to the project were: the Academic-Model Technology Coalition (AMTEC); Charles Koepke, the director of the TASCII Level II project; the CDE's Office of Educational Technology; and evaluation support from CETAP staff.

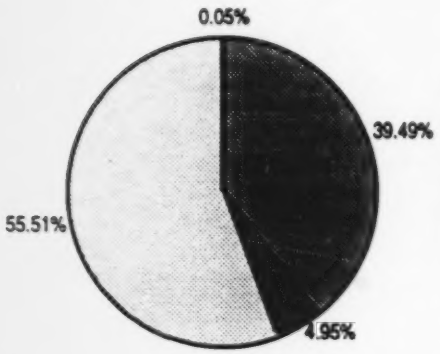
VII. Funding Support

A. Funding Sources

Project LINKS received a grant of $129,994 from the CDE to fund its development and dissemination activities from January 1990 to June 1991. This funding was provided by AB 1470. An additional $16,290 was provided by workshop fees and approximately $170.00 was received from the sale of publications. The value of in-kind support received was estimated to be $182,750. Thus the total revenue received by the project was $329,204. Figure 8 shows the distribution of the project revenue sources.

> *"We were underfunded, primarily due to the unexpectedly large number of adopting schools and the addition of the IBM partnership. In addition, it seems that we seriously underestimated the costs for a lot of our expenses, such as mailing, faxing, phone calls, clerical help, etc. Long distance phone consultations particularly took up a big chunk of money."*

Figure 8: Revenue Sources



Source	Amount
State AB 1470 funds	$129,994
Workshop fees	$16,290
Sale of materials	$170
In-kind support	$182,750
Total	$329,204

The in-kind support was received from a variety of sources, including $110,000 from the Fullerton School District in the form of district personnel time and use of a portable building. The IBM California Education Partnership donated $70,000 in hardware, software, installation and training. Apple Computer, Inc. contributed a Macintosh LC, valued at $2,000. The California Technology project coordinated travel and awareness sessions, valued at $350 and other Level II MTS projects provided an estimated $400 worth of consultation.

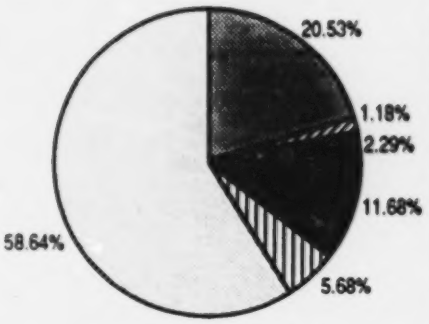
> *Our school site council has been a buffer, providing a lot of support, including dollars. Half of our equipment was purchased with site council funds, whereas with AB 803, only 25% could be spent on hardware.*

It is anticipated that the project will receive $220,000 in AB 1470 funding and $39,500 in fiscal agent funding from the Fullerton School District for the period from July 1991 to December 1992. No additional support is expected from IBM.

B. Project Expenditures

Project LINKS' total expenditures for January 1990 - June 1991 were $272,994 including $40,000 in equipment and software from IBM. An additional $20,000 worth of IBM equipment will be added by September, 1991. Over half of the project's expenditures were covered by in-kind donations. Figure 9 shows the distribution of project expenditures.

Figure 9: Project Expenditures



Expenditure	Amount
Professional staff	$59,065
Support staff	$3,400
Staff benefits	$6,600
Materials/supplies	$33,609
Contract services/ expenses	$16,356
Technology hardware	$168,731
Total	$272,994

VIII. Supporting and Impeding Factors

Facilitating Factors: The major facilitating factors were support from the Fullerton School District, assistance from the CDE, professional development consultants from the California Literature Project, and incentives to disseminate outside the district. Interaction with the California Technology Project, AB 1470 funding, and knowledge of effective dissemination strategies also facilitated project implementation.

Impeding Factors: The major impediment to project implementation was loss of funding due to supplemental grants. Other impediments were inadequate staffing and lack of a geographically defined service area. Some adopting projects could not afford travel costs.

Anticipated Changes: Additional professional and clerical staff will be added in 1991-92.

IX. Project Outcomes

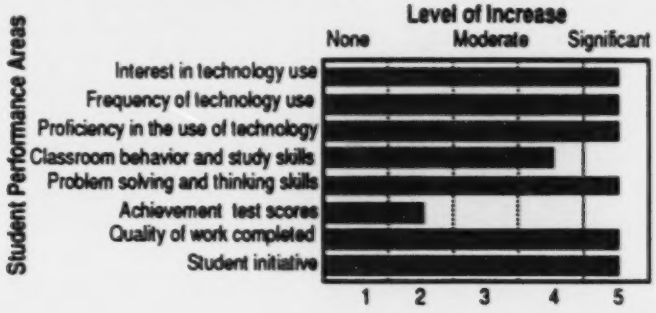
A. Student Outcomes

Findings from the Self-Assessment Inventory: Project LINKS met all of its student objectives. The project directors were asked to rate the observed changes in students participating in project-related instructional activities.

> *"Students' attitudes towards reading are much more positive as a result of interaction with computers. Students see themselves as readers and writers, something confirmed by survey results which showed this to be the perception of three quarters of the students surveyed."*

Figure 10 shows the extent to which the project increased student performance in a variety of areas.

Figure 10: Effects of Project on Students



Some of the specific changes noticed by project staff were that all students are using computers in the lab weekly, all students read and write more, student writing has been improved through the use of word processing, and that technology use motivates students. Project staff found that the motivation and computer awareness created by the project resulted in widening the gap among students and created an equity problem. There is a great difference in keyboard competence between those students who have outside access to computers and those who do not. The project staff are interested in finding ways to eliminate this gap. In general, the project staff believe that important benefits for students were attained and that justified the effort

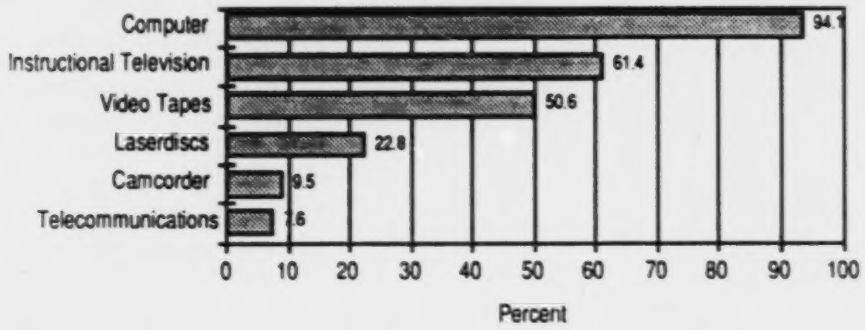
Findings from the Student Survey: One hundred sixty-two surveys were returned from Laguna Road School, representing 25 percent of the 654 students served by the project. One class in each of grades one through six was surveyed.

Technology Use: A variety of technologies were used by Project LINKS. As shown in Figure 11, almost all students stated they used computers at least once per week. Few students use computers on a daily basis, however. Sixty percent of the students used instructional television and half used video tapes once per week or more. Laserdisc players, camcorders, and telecommunications were used by a much smaller percentage of students.

Most students (94%) use computers in the school's computer lab. A few stated that they also use computers in the library or at lunch and 30 percent use computers at the lab after school. Over half of the students have computers at home. About two thirds of the students stated they use computers to do reports and assignments and about the same number report they use computers to play games.

Computers were most often cited as being used in English, writing, and reading instruction (75%) which is the main focus of the project. Computers were used to a lesser extent in social studies (50%), science (35%), art (25%), and math (11%).

Figure 11: Percent of Students Using Technology at Least Once per Week



Impact of Technology: Sixty-two percent of the students felt computers had significantly improved their abilities in studying and more than a quarter indicated computers had improved their abilities "a lot." An even greater number of students stated their writing abilities had been improved – three quarters noticed significant improvement and half felt they had improved "a lot." Similar but slightly smaller improvements were seen in reading and problem solving.

Most of the students believed their grades had improved as a result of using technology. Only 21 percent stated their grades had not been improved. English/reading/writing grades were stated to be improved the most, followed by science, social studies, and math. A majority of students (85%) also stated they enjoyed these subjects more as a result of using technology.

Other significant areas of improvement were: ability to work with others (cited by 81%), attitude about going to school (74%), and self esteem (65%).

Student Comments: Students were asked to describe how the increased use of technology at their school has made a difference for them. Many students (30%) stated the technology use had made writing much easier for them. This was especially true in the lower grades. Students also reported that technology made school and learning more enjoyable. One second grader stated: "School would be boring without technology. It lets us learn fun things and makes us not want to leave school for the whole summer." Another wrote: "Technology makes me want to come to school every day." Another common remark regarding computer use was, "It makes learning easier." A fourth grader reported: "The use of technology at my school helped me to understand the subject more and improved my grades because the equipment shows me the important information."

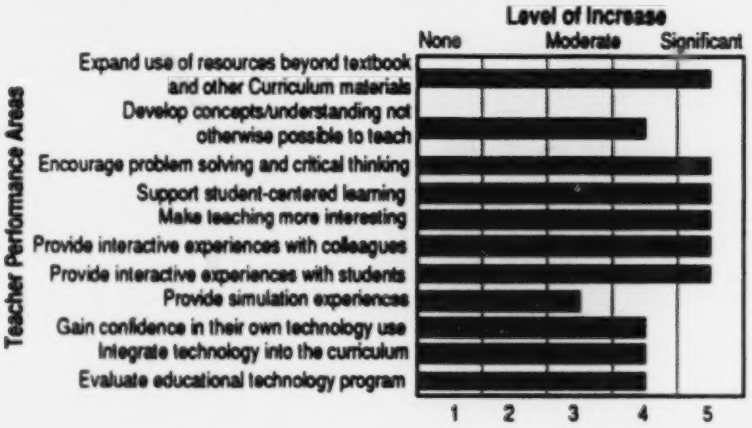
B. Staff Outcomes

Project LINKS met all of its staff development objectives. The projects were asked to rate the observed degree of change in teachers as a result of the staff development activities.

> *"It doubled the strategies available to us as teachers. It allowed us to reach student learning styles we probably wouldn't have met otherwise."*

As shown in Figure 12, teacher performance was improved in a variety of ways.

Figure 12: Effects of Project on Teachers



Project staff report that the project facilitated the addition of new topics to the curriculum and the use of a broad range of media. The curriculum has become more meaning-centered and student collaboration and the use of authentic experiences has been increased. Teachers are learning to use technology with the students, are collaborating with their peers, and are participating in site based decision making. Staff development, practice, and technical assistance have helped teachers to become comfortable with using technology to support curriculum. Teachers have participated in the on-going evaluation of project activities. In general, the project greatly increased staff use of technology. The project staff state that important benefits for teachers were attained and the effort involved in implementing the project was clearly worthwhile.

C. Program Outcomes

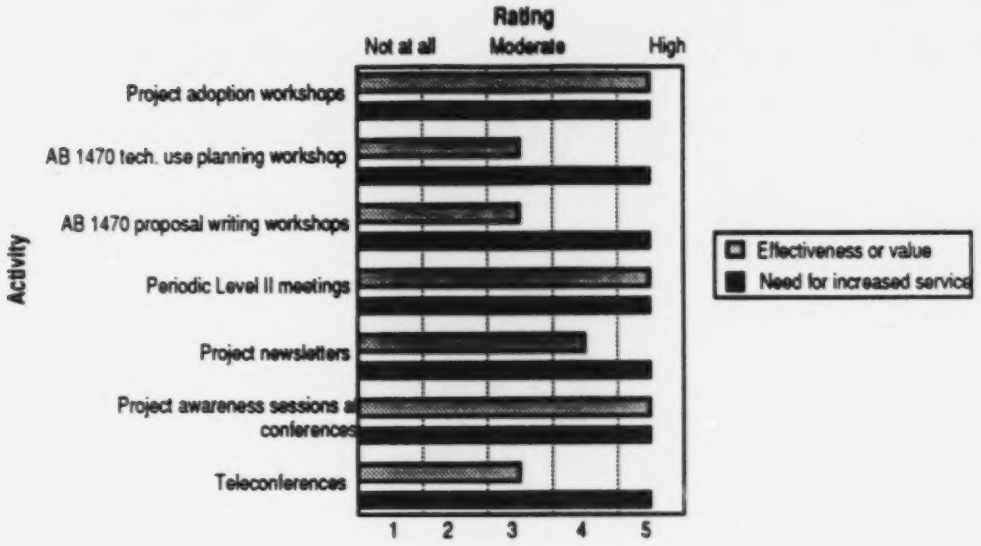
Project LINKS stimulated a significant increase in staff familiarity with and use of the state curriculum frameworks. A significant improvement was also noted in the management and coordination of learning resources. Aspects of the project were incorporated into the School Improvement Plan and the project is likely to expand and become institutionalized as part of the overall school instructional program. Multiple additional uses of technology have occurred at Laguna Road School due to Project LINKS, including teacher management uses that will support changed assessment practices and the use of multimedia.

The project has encouraged school restructuring efforts, has stimulated interest in seeking other sources of funding for additional program improvements, and has stimulated collaboration with the California Subject Matter Projects.

D. Impact of Services

The project directors were asked rate the perceived effectiveness or value to participants of each service offered by the project. Additionally, they were asked to rate the perceived need for increased services. Informal comments and testimony were used to determine the ratings. Figure 13 displays the rated levels of effectiveness and need for services.

Figure 13: Effectiveness and Need for Services



E. Cost Benefits

Given the objectives and expectations of Level II project dissemination, the project director believes that the funding level for the project has been somewhat insufficient because the number of adopters exceeded expectations. It would have been impossible for the project to accomplish what it has achieved without the existence of in-kind contributions and volunteer assistance. If AB 1470 funding were terminated, LINKS would continue to grow as a project but only self-supporting services that do not burden the staff and students at the site would be continued and the project would probably apply for other types of funding. In general, the project director believes that the Level II dissemination model is a cost-effective approach to providing information and training on exemplary models to other districts.

F. Unanticipated Outcomes

The unanticipated findings for students were:

1. The value of video as a means to provide common information to students and present them with ideas and images has been confirmed. It is a relatively low-cost and simple technology that produces significant value.
2. The significance of technology resources as a means of providing authentic learning experiences for students has become increasingly apparent.
3. All upper grade students have had experiences with telecommunication.

The unanticipated findings for project staff were:

1. Providing full-time access to technology is essential to integrating use into the curriculum. This means that equipment must be available both in the classroom and for teachers to check out.
2. The staff has become committed to computers as a resource to support classroom instruction and management. Teachers can accomplish more with the use of computers. The computer has become essential to planning and curriculum development.
3. Ongoing staff development, technical assistance, and time for planning is essential to maintaining interest and use of equipment.

> *"We were a 'burr under the saddle' to our district. What we were doing promoted a lot of activity in our other schools. We were able to provide a lot of staff development and training, and several of our schools became interested in applying for School Based grants."*

The unanticipated program outcomes were:

1. Assessment strategies are beginning to change; video is being used to support assessment by approximately 25 percent of the staff.
2. The use of ITV has increased significantly and laserdiscs are in use by some teachers.
3. The need for a lab was not recognized at first – LINKS was originally a classroom computer project. The need for a full-sized lab as an extension of the classroom became apparent over time. All activities are in preparation for or in support of classroom activities.
4. Teachers are much more in command of equipment and increasingly familiar with software. Software is matched to instructional purposes.
5. The most significant change may be in teacher and student collaboration. The collaboration time provided by the physical education teacher has changed the school. In addition to the institutionalizing of teacher collaboration and coaching, the school PE program was significantly improved and is highly valued by teachers and students. The collaboration time itself is the most highly valued element of the program by staff.

X. Recommendations

The following recommendations were given by Project LINKS staff:

1. A full time director is essential for a project of this size. However, it is important not to lose touch with the classroom. To solve this problem, perhaps co-directors should be used.
2. Funding needs to be great enough to support keeping up with the technology.
3. The AMTEC coalition is helpful and should be continued.
4. Evaluation forms should be provided at the beginning of the project term.
5. The AB 1470 guidelines should be revised so that expectations for adoption are clearly defined.
6. State expectations for Level II projects should reflect that the process of implementing the project is considered to be an important product.
7. The process for refunding should be streamlined. An inordinate amount of time was spent preparing the evaluation portion of the proposal – time that should have been spent on dissemination activities.

> *"A single dissemination year is not long enough to take advantage of the networking of adopters and those who hear of the project from adopters and other sources. We are hearing from a lot of schools now, many of them not our adopters, and we won't be able to accommodate them in the time remaining. We need more dissemination time."*

Project TOPS

Skyline elementary school staff had recognized for some time that their science program was in need of some improvement. The language arts program had been in the limelight for several years, with staff working hard to bring it to exemplary status. Three years ago both the SIP committee and site council targeted the science curriculum for major work. Then AB 1470 funding came available, and it was the perfect setting to develop a model technology school. "We have a lot of risk-takers in our school," commented one of the teachers, "and they are very innovative. Some of the science teachers had been involved with technology and were willing to run with the grant. The timing was perfect." Thus was born Project TOPS (Technology Optimizes Performance in Science). (1)

With lots of planning and coordination amongst staff and committees, it was decided that an integrated approach, using technology to support the science curriculum, was the best. "We had always been so textbook oriented, and we knew we needed to do more 'hands-on' activities. We really saw technology as being the opportunity to make the shift," indicated the project director. "But we were also cognizant that whatever we did with technology needed to be appropriate to the curriculum, not just using equipment for the sake of using it. As a result, we use technology only when our curriculum is better than if we didn't use it."(1)

The district provided lots of support and latitude, and assumed several tasks that normally would fall to the project director, such as printing, paperwork, reports, room configuration, design, layout, etc. The science department attributes much of their success to this support. "Having the district take on some of these tasks left us free to do what needed to be done to improve our science program," said one of the teachers. And improve it they did, bringing a wide variety of resources into a central lab area where all teachers could have access. "It would have been nice to have had enough funds to put equipment and programs into every teacher's classroom, but we didn't have that kind of money," said the director. "Having the resources in one central location was the next best step." Everything was set up to be easily moved into classrooms as teachers needed it. "We didn't want movement of equipment to be an issue that precluded teachers from using the resources." In addition to housing equipment, etc., in-services are held in the lab for the entire staff, and for visitors when they come to observe. "Teachers also have the option of bringing their students into the lab for class presentations and work, and we do a lot of team teaching, where several of us work together with students on projects."(1)

According to students, science has improved tremendously as a result of the efforts made these last three years. As one commented with a smile, "My teacher used to make science so boring. I couldn't stand it when she just went on and on and on. Now we come into the lab or she brings things into our room and we get to work with them. It's much better." And as another added, "I like it that technology is so fast. I mean, your brain could probably do the same thing if you were really smart, but there would likely be some mistakes. My brain doesn't work that fast. Using technology, I feel that I really learn so much more so much faster. I really enjoy science a lot now."

I. Background Information

A. Project Background

Project TOPS (Technology Optimizes Performance in Science) is a K-6 program which matches teaching methods and technologies to sequenced school and district curriculum and the Science

Curriculum Framework. Taking maximum advantage of available technology, the lessons emphasized problem solving, science processes and basic science concepts.

B. Development/Demonstration Site Demographics

The project development/demonstration site for TOPS is Skyline Elementary school located in Daly City in the South San Francisco District. Skyline Elementary's 1990-91 enrollment was 542 students in grades K-6. The ethnic make up of the school is primarily Filipino (50%) and 19% are Asian, 8% are African American, 15% are Caucasian and 8% are Hispanic. All schools in the district received services and technology-based resources from the project upon request.

During the January 1990 through June 1991 funding period, the Technology Optimizes Performance in Science (TOPS) Project directly served 542 students in grades K-6. All were enrolled in the Chapter II program, 9% were designated ESL and 10% were in special education classes.

C. Project Description

The major objectives and expected outcomes of TOPS were:

1. Improve science instruction school-wide by systematically matching the most appropriate teaching methods and technology to a carefully sequenced curriculum aligned with the state framework.

2. To stimulate student and teacher interest and participation in science.

3. To provide training and support for teachers to use technology and direct experience to enhance science instruction.

4. To monitor the effects of innovations and disseminate effective strategies and products.

The major activities reported for staff and students were:

1. Give teachers and students extensive use of computers, instructional television, interactive video, robotics, multimedia, telecommunications and hands-on science experiences.

2. Teaching strategies that emphasize the development of thinking skills and science processes as well as specific content

3. Staff development that is designed to strengthen and reinforce the implementation phase of the curriculum implementation cycle and provide experience and leadership for exemplary use of technology.

The major results/outcomes reported for the project were:

1. An increase in the students interest and participation in science

2. Improved achievement in science content and growth in critical an creative thinking skills

3. Teachers have adopted a variety of products (printed materials, videotapes, electronic media, etc.) to disseminate effective technology-based experiential interventions to other schools.

4. Project outcomes have been widely disseminated through conferences, workshops and mailings.

5. Over 30 schools that submitted AB 1470 site-based projects adopted Project TOPS.

II. Planning

A. Planning for Project Development

Project TOPS was developed primarily to meet the following needs and interests: to explore an interest in technology, to increase technology use, to respond to community and district priorities, to improve student learning and attitude, to stimulate restructuring, to make teaching more exciting, to enhance the curriculum, to facilitate student-centered learning, to acquire equipment, provide for staff development and to increase the amount and quality of science instruction.

A school site technology committee served as the planning committee for TOPS. The committee's function was to acquire technology related and other instructional materials. The plan was written into the existing school improvement plan (SIP). Fifteen teachers, seven parents, one school administrator, three non-certificated staff, twelve students, two district personnel, and 13 members of support agencies including the county office of education, KQED, software publishers and curriculum projects participated in the planning and implementation of the project.

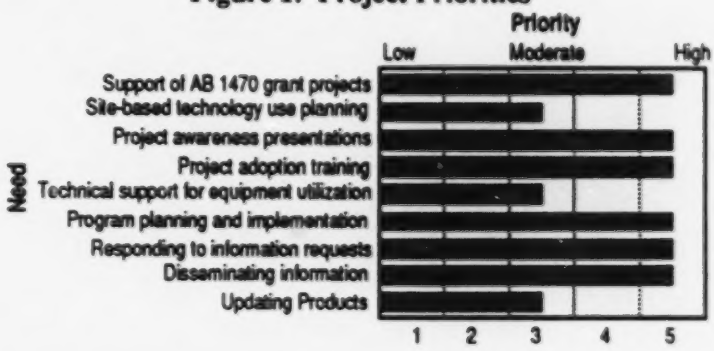
> *"We never did anything without including everyone. Our SIP committee developed school-wide activities. We made a real effort to include this project as a school-wide endeavor. We always wanted to feel this was the school's project, not just the director's, even with dissemination."*

The project directors were asked to indicate the emphasis given to major educational and program priorities during January 1990 - June 1991.

> *"Planning was critical for our project. We couldn't be where we are today without it. Our conscientious planning set the tone that helped us through later troubled waters, like having to deal with significant staff turnover."*

Figure 1 shows the rating assigned to the different priorities by TOPS.

Figure 1: Project Priorities



B. Modifications to Original Proposal Plan

Major changes were made in the project objectives, activities, purchases, and budget from what was originally proposed. The objective of training the entire staff was not met due to a lack of substitute

teachers. The implementation of the project was delayed because of problems with the purchasing processes. Purchases of hardware and software were changed in order to stay current. Also, the donation of IBM equipment necessitated the purchase of additional software. The budget was changed to include more travel expenses as more meetings were required than expected. The position of project evaluator, which had been funded through in-kind support, was lost due to district budget cuts.

III. Content

A. Areas of Focus

Science and Health Education were the curriculum areas that were given the most emphasis by Project TOPS during 1990-91. English-language arts, history-social science, mathematics, and visual/performing arts were all given secondary emphasis. School-wide, technology use in the curriculum and professional development were given the major emphasis. Secondary emphasis was assigned to general technology use, school restructuring and school climate improvement. In the process areas major emphasis was given to critical thinking, cooperative learning, and interest and attitude. The study skill and self-esteem processes were given secondary emphasis.

> *"We set out to enhance instruction through the use of technology, emphasizing all the content areas of science, including earth, physical, life, and health. We wanted teachers to use science as a 'process,' with lots of hands-on activities."*

B. Technology Applications

The major types of technology hardware used in the project were computers, laserdisc players, instructional television (ITV), audio/video production, LCD overhead projection panels, science lab equipment, calculators and telecommunications. Of secondary emphasis was CD-ROM drives, technology for the handicapped and the networking of computers in the classroom. Since January of 1990 Project Tops has purchased the following equipment: Macintosh SE computer, Pioneer videodisc player, speaker, Apple scanner, Apple Printer, Apple CD-Rom, Apple IIgs computer and a Canon still video camera.

The major types of software used were word processing/desktop publishing, hypermedia/multimedia, graphics programs, database, spreadsheet and other business software, programming, telecommunications software , probes and robotics. Computer assisted instruction, electronic encyclopedia, music voice speech recognition, school management and other instructional software were also used, but to a lesser extent.

The project directors were asked to list the five most widely used software, video, laserdisc, and/or CD-ROM titles and rate the effectiveness of each title in supporting the project's objectives. It was suggested that the project director ask for the opinions of the staff members who most frequently used the products before determining the effectiveness ratings. National Geographic's *Kids Network*, Optical Data's *Windows on Science*, the Learning Company's *Children's Writing and Publishing*. Broderbund's *Probeware* and LCSI's *Logo Writer* all received a high rating of effectiveness.

> *"Technology is a tool that has allowed us to bring in many things from real life to expand students' experiences beyond the classroom. The important thing is that technology is the vehicle. It is <u>not</u> the 'be-all' and 'end-all.' You don't just send students to use the technology without the curriculum."*

IV. Project Implementation

A. Implementation Schedule

The TOPS project was slated to begin in July of 1987. The project staff initiated a number of activities in conjunction with the development of the grant proposal. Implementation of specific staff development was delayed due to the elimination of The Teacher Education Computer Center.

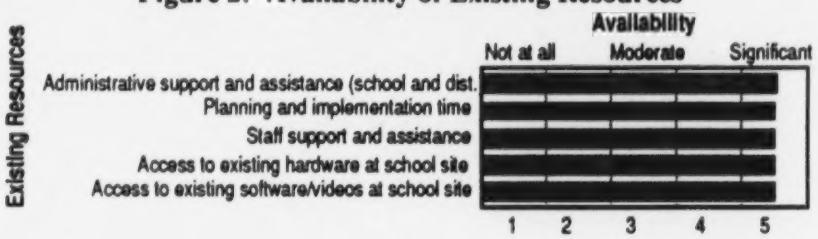
B. Project Management and Implementation Resources

The project director, a classroom teacher, was primarily responsible for project management at the school site. The major sources of individual assistance for project implementation were fellow staff members, county office staff, and the California Technology Project, a school and district resource person, KQED (instructional television agency), and a consultant These sources of assistance were available whenever needed. The project directors were asked to rate the availability of various resources which were in existence before the start of the project.

> *"There was always so much to do and so little time to do it in."*

Figure 2, below, shows these ratings for TOPS.

Figure 2: Availability of Existing Resources



The TOPS project was carefully coordinated with Chapter II mini-grants, educational technology, science curriculum and a Lawrence Hall of Science project. There was equitable access for students and teachers to project resources at the project development site.

C. Staff Development and Technical Assistance

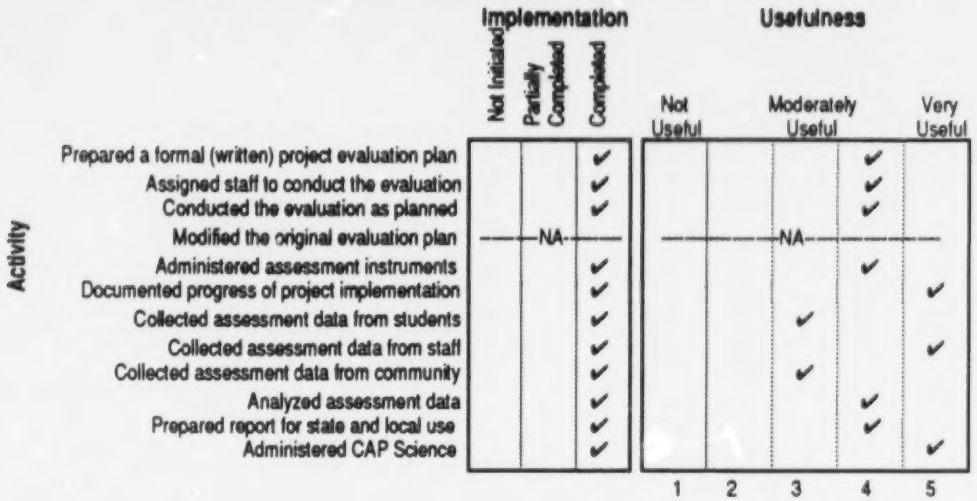
The county office of education, the CTP, the district, KQED, and a consultant , vendors AND teachers served as the major sources of technical assistance to the project. This assistance was used to install and maintain equipment, select appropriate software, integrate technology with the curriculum, locate resources, provide problem solving/trouble shooting services, and assist in evaluating the project.

Project TOPS conducted 50 workshops between January of 1990 to June of 1991. Twenty-three of them supported AB 1470. These included grant-writing, evaluations and implementation workshops. The majority of workshops were science related and included such programs as planing a science fair, science and camcorder use, science software, and technology in the science curriculum workshops. Twenty-four of the workshops dealt specifically with Project TOPS in such areas as: adoption, program planning, framework and focus, state curriculum, awareness. The project conducted three 2-day Technology Leadership Academes (TLAs). Two of the TLAs were social studies and one was science. Other workshops included two telecommunications, the one-computer classroom, state curriculum and staff development. In total 1300 educators participated in TOPS workshops.

D. Evaluation Procedures

Projects were asked to state the level of implementation and rate the usefulness of a series of evaluation activities. Figure 3 depicts this information for Project TOPS

Figure 3: Implementation of Evaluation Activities



The project evaluation plan included on-going assessment activities (formative evaluation) that were implemented as stated in the proposal. The project director, contract consultants and the CDE were primarily responsible for the evaluation.

> *"We developed our own evaluation forms so they would fit our project. If there had been forms available, it would have made it a lot easier. We could use a lot better instruments, especially performance-based stuff. And there isn't much available at all in the way of testing. How do you test something so new?"*

Quantitative methods used to evaluate Project TOPS included: standardized achievement tests, California Assessment Program(CAP), proficiency tests, portfolio assessment, student surveys, and teacher surveys. Qualitative methods for assessment included: portfolio assessment adapted to the project, student interviews, student journals, teacher assessment of student work, classroom observations, teacher interviews, workshop evaluations, and changes in school plans. The assessment of Project Tops was included in the school-based self assessment, as part of the SIP and in a site review assessment not conducted during the project. Comments about the project included in the school-based self-assessment included the fact that science is a strong emphasis in the school. Earth, physical and life sciences are taught at all levels, participating hands-on experiences are provided, science processes are emphasized and there is much evidence on technology and support material. The fact that Project TOPS make s extensive use of community resources and the fact that thinking and communicating skills are used in learning science was cited as the aspects of the project that are exemplars for Skyline school.

E. Extent of Implementation

Th original project activities, as outlined in the proposal, were implemented as planned. Among the activities were: AB 1470 grant writing, updating awareness brochures and packers, disseminating

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awareness materials, presenting at conferences and conventions, publicizing project services, providing support services for adopters, establishing database for project services, maintaining and updating site training resources and assessing evaluation and adoption activities. An activity was added that developed adopters planning and agreement forms. All of the activities will be repeated or continued in 1991-92.

F. Staff Activity

The majority of staff time was dedicated to project adoption workshops, technology use planning workshops, proposal development workshops and assisting in state grant reviews. Effort was also spent assisting in site-level proposal development and newsletter articles relating to AB 1470, although to a lesser degree. Figure 4 shows the level of AB 1470 support activities.

Figure 4: AB 1470 Support Activities

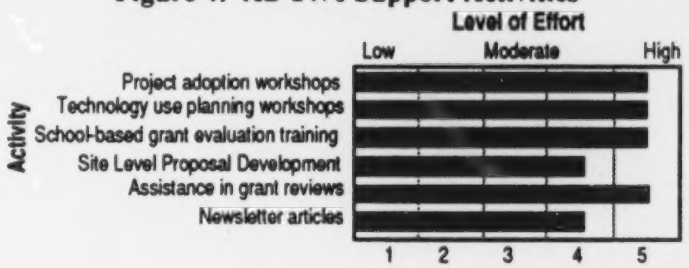


Table 1 shows the estimated number of publications produced by TOPS.

Table 1: Project Publications

Publications Produced or Distributed by Project	Number of Publications	Number of Copies Printed
Workshop Schedules	3	50
Announcements, Brochures, Flyers	6	4,070
Resource Guide	1	150
Newsletters	3	50
Videotapes	5	105
Resource Guide on Disk	1	38

The project director and coordinator spent approximately 940 hours on CTP activities. the majority of the time was spent in providing assistance and training to adopters. Technical and clerical support provided about 425 hours of service, the majority being spent preparing dissemination material and completing surveys and reports. One project co-coordinator who is not currently employed by the district served as a consultant. The consultant spent about 816 hours on Project TOPS. the majority was spent on conducting awareness activities. Time was also spent by the director, coordinators, staff and the consultant on such activities as overall planning and management, state and local meetings, and AB 1470 project support.

G. Collaboration with Other Agencies

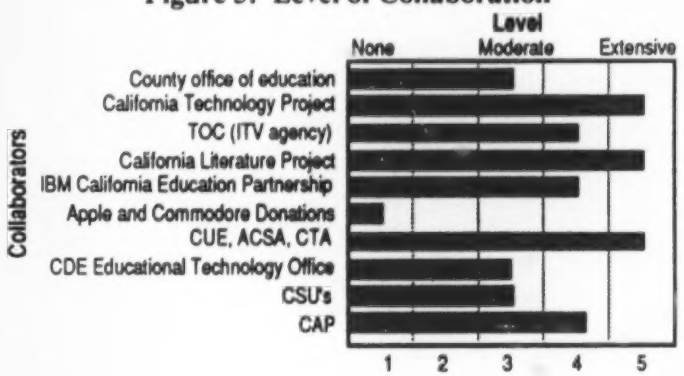
Project TOPS collaborated with a variety of other projects and agencies. The county office of education conducted workshops and provided site visits. The CTP helped by holding teleconferences, grant development workshops, technology use planning workshops and TLAs. ITV agencies evaluated programming and served as a workshop site. The Subject Matter Projects provided training at workshops, provided awareness materials and assisted with the Technology Leadership Academies.

The IBM Partnership developed proposals including equipment configuration, and school staff in-service. Professional Associations(CUE, ACSA, CTA) offered presentations and distribution of dissemination materials at conferences and meetings. The CDE Educational Technology Unit planned meetings.

> *"Setting up the CTP agencies was one of the better things the state has done. It's so easy to become autonomous and isolated when you're working without that support. Our work with CTP was collaborative, cooperative, and very beneficial. We're more effective as a result."*

Figure 5 shows the project director's ratings of the level of collaboration with each agency.

Figure 5: Level of Collaboration



The Coordinator added that the State University System also helped by providing site resources for pre-service training and research. The California Assessment Project conducted and filmed performance assessment for state-wide use. Commodore also collaborated by conducting workshops at TOPS site for teachers from other schools and districts.

H. IBM California Education Partnership

Project TOPS plans on using the equipment and software from the partnership to provide another platform in a different configuration. They plan on forming a networked laboratory with one mobile station. The partnership has offered four or five workshops in conjunction with other school districts. Skyline participation has been minimal because the school did not receive the equipment until the end of May. The IBM mobile lab visited the site and provided teacher, student and parent awareness. As of May 1991 IBM has installed twelve computers with a file server and CD ROM and has provided exemplary software. The partnership is providing TOPS with a computer platform that is demonstrating increased use among K-12 educators. As noted above, TOPS will be able to provide prospective adopters and adapters with information and training using MS-DOS and networking. The director hopes that the equipment will increase student and teacher access to technology and will facilitate individual student activities on the computer.

> *"The IBM computers and software will complement what we already have. We have really focused up until now on having movable stations that can easily be transported into any classroom; the IBM component will be stationary."*

V. Project Dissemination

A. Marketing Efforts

Project TOPS began dissemination activities in September of 1989. Figure 6 shows the level of impact for several activities as rated by the project director.

Figure 6: Impact of Various Marketing Methods

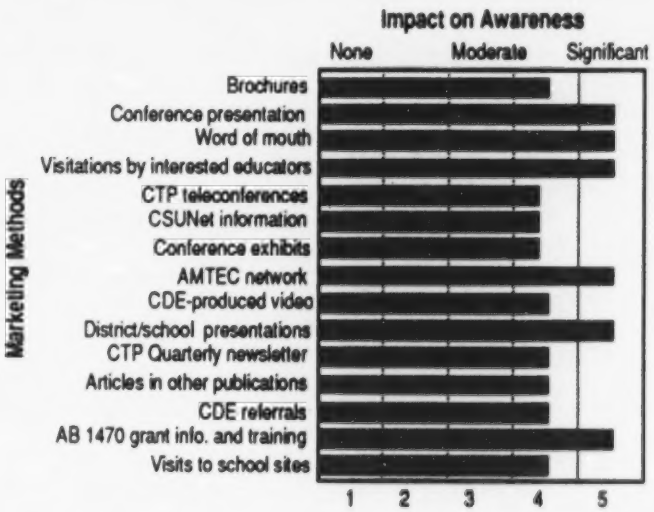


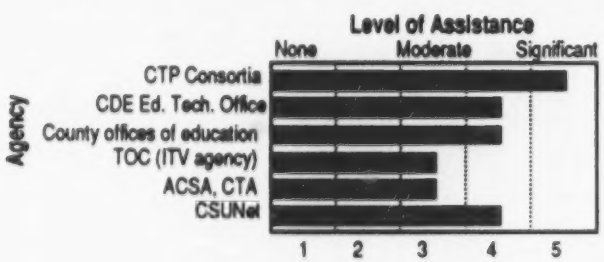
Table 2, on the following page, shows the number and cost of products produced for the dissemination and adoption of Project TOPS between January 1990 and June 1991.

Table 2: Dissemination Products

Products	Quantity Produced	Cost
Project specific brochures	2,000	$12,820
Contribution to AMTEC brochures	1,200	$780
In-depth information portfolio	120	$60
Training guides	120	$300
Supplemental training materials	65	$130
Project-produced video	105	$840

The projects were asked to rate the support systems that actively helped disseminate information and training. Figure 7, shows the assistance provided by a variety of these services to Project TOPS.

Figure 7: Dissemination Support Services



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B. Dissemination Evaluation

Project TOPS gathered data on the services and products provided to promote project awareness and to install project at adopting sites. Surveys were routinely administered to assess relevance and effectiveness of workshop. Logs of requests for information were maintaining on a database. the distribution of brochures unsupported by a presentation resulted in few inquiries and requests. A questionnaire was sent to adopters to determine the extent of adoption, but only three had been returned by May of 1991.

C. Adoption/Adaptation

Before a site can be considered a TOPS adoptee, it must:

1. Develop a school wide instructional plan for science
2. Sponsor school wide events to support the plan.
3. Develop technology based lessons to support units of study
4. Organize science materials for easy distribution.
5. Utilize selected TOPS materials for curriculum and staff development
6. Conduct TOPS awareness using videotape.
7. Prepare individual staff growth goal statement
8. Visit a TOPS site
9. Train staff to meet goal statement
10. Conduct evaluations using TOPS surveys and staff

> *"When adopting a project, you have to keep in mind that you can't adopt it 'lock, stock, and barrel.' You have to adopt what is appropriate for your own school. What we do is an idea, not a curriculum package. A school can take our strategies and 'tweak' them to fit what they have. We always try to show how a school can adapt what we have to what they have."*

The specific elements of Project TOPS that were adopted most often were:

1. Training videos
2. School-wide activities and curriculum planning
3. Evaluation instruments
4. Specific technologies/software--laserdiscs and telecommunications
5. Desktop publishing. Logowriter
6. Video club and related activities

The project has established formal agreements with adoption sites regarding the implementation of the minimum criteria or use of specific services. TOPS helped AB 1470 adopters design an evaluation plan at six sites. It conducted follow-up visits at three sites, conducted follow-up telephone evaluation and monitoring of potential adoption sites at five sites. It asked 22 sites for written documentation of evidence of adoption and conducted surveys to determine the extent of adoption and the same sites.

Of the 22 sites that adopted Project TOPS, all were AB 1470 grant recipients. Eleven of the sites received formal on-site training with follow-up. Six of the sites have most of the major element replicated at their sites. Three have at least one major element of the project in place. It was too early for the project director to assess the quality of the adoption. So far seven of the schools have shown an exemplary adoption of Project TOPS.

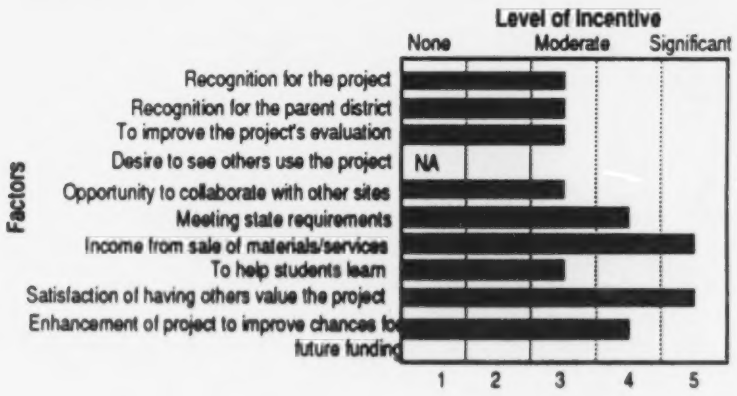
The project directors were asked to identify the factors that were incentives for them to encourage other districts to adopt their projects. TOPS identified helping students learn and the satisfaction of having

others value the project of primary importance. The opportunity to share with others and the opportunity for further funding were somewhat less important.

> *"Most of the staff at Buri-Buri was unaware of laser technology until they saw what we were doing. We have had a major impact on the way they now teach science. We helped them with training, with purchasing of equipment, and with problems/questions. We've even loaned them a lot of our equipment and/or programs. They've broadened what they're teaching and how they're teaching as a result."*

Figure 8 shows the incentives for Project TOPS.

Figure 8: Level of Teacher Incentives for Participation



VI. Project Support Resources

A. Services

The school district assigned a part-time staff person to assist with Project TOPS. This person was very helpful in planning and implementing the project. Parents also provided assistance with various school wide science enrichment activities and events (i.e. science fair, assemblies, lab)

VII. Funding Support

A. Funding Sources

Project TOPS received a grant of $110,667 from the state AB 1470 funds. They recovered $450 in workshop fees. Service fees were collected for adoption/adaptation sites that amounted to $2,550. The fiscal agency contributed $33,095. Business contributed $800. Including in-kind support listed below Project TOPS' total revenue for January 1990-June 1991 was $238,512. In 1991-92 the amount of support anticipated from the district is expected to be smaller due to fiscal constraints. An increase of AB 1470 funding is requested.

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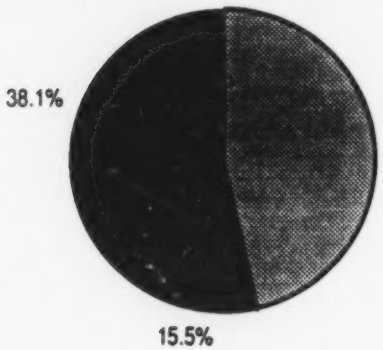
Figure 9: Revenue Sources



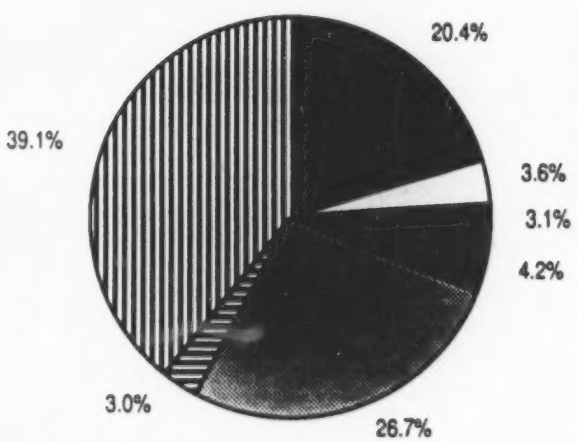
Source	Amount
State AB 1470 funds	$110,667
Workshop fees, Other	$36,895
In-kind support	$190,950
Total	$238,512

The in-kind support was received from a variety of sources and amounted to approximately $90,950. The fiscal agent provided and maintained facilities, hardware and software amounting to about $12,500. The county office proved about $850 worth of consultation time on science programs and technology. The CTP assisted in scheduling, providing a training site, mailing, and distribution of materials., amounting to about $1,200. ITV agencies provided training for project staff. The IBM California Partnership donated extensive hardware, software and training. Business and industry contributed software.

B. Project Expenditures

TOPS total expenditures for January 1990-June 1991 amounted to $238,512. This total includes professional staff salaries, support staff salaries, materials and support, contract services and expenses and capital outlay. In 1991-92 the project does not anticipate a major donation of hardware/software. Apple Computer plans to donate a Macintosh LC.

Figure 10: Project Expenditures



Expenditure	Amount
Professional staff	$48,500
Support staff	$8,460
Staff benefits	$7,315
Materials/supplies	$9,975
Contract services/expenses	$63,652
Indirect costs (8.65%)	$7,204
Technology hardware	$93,206
Total	$238,512

VIII. Supporting and Impeding Factors

A. Facilitating Factors The level of state AB 1470 funding was a major facilitating factor. It was absolutely necessary for implementation. The school district support of dissemination activities was a facilitation factor. The district level director coordinates TOPS services with the district's technology plans and activities. The cooperation and interest of school staff also helped and the instructional staff was eager to participate in on-site dissemination activities. The availability of staff and consultants to provide professional development was a major fact, as a major portion to the funding was used to assist other sites.

> *"I use the science room here a lot," commented one of the teachers. "It's always set up for me with the appropriate equipment and programs, which saves me hours. It's a real support for teachers."*

Business and industry, especially IBM's equipment made a major difference. Positive interaction with the CTP, especially in the form of collaborative scheduling of road shows for grant writing helped immensely. The district underwrote the cost of major portions of Project TOPS and supported the site, and was a major facilitation factor. The CDE spelled out parameters and gave guidance. Other facilitating factors included: the county office of education, colleges and universities, packaging material for dissemination,and incentives to disseminate outside the district. The availability of a consultant who helped to develop the project was especially helpful to that aspect of Project TOPS.

> *"We have a Peninsula Foundation that gives us dollars each year to support our project. We also have lots of volunteers that have really been of terrific assistance. It's a real plus to the project when others are willing to contribute in some way."*

B. Impeding Factors The only impeding factor the director mentioned was the problem of potential adopters not applying because of the fear of losing their Supplemental Grants.

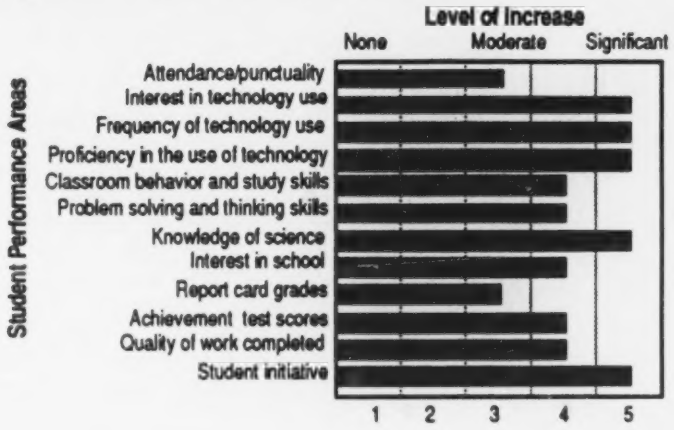
> *"Not everyone is technologically interested or literate. Many find it intimidating, which takes additional time when you're training them. Then there are those that aren't interested at all, no matter what you do. It really takes special people to get a new new project going, people who are willing to give 'more' and make a strong commitment."*

IX. Project Outcomes

A. Student Outcomes

Findings from the Self-Assessment Inventory: The project director of Project TOPS feels that they meant their student objectives. Figure 11 below shows the directors assessment of the effects of the project on students.

Figure 11: Effects of Project on Student



The project helped students develop skills and confidence using computers, videocameras, laser discs and robotics. The many hands-on activities, science fair and other contests and special events created interest in learning science and motivated concept development. Students worked cooperatively with interactive technologies to prepare useful products.

> *"When you're working out of a book," commented one of the fifth grade students, "you can't see what's happening for yourself. You can't manipulate it. Using technology is more fun, and I learn more because I get to do things. Technology is the wave of the future. We're going to be using it later, so we need to learn about it now.*

Parent involvement in school-wide programs helped students and their families become more connected to the school. Overall, the director feels that important benefits for students were attained and were worth the effort.

> *"You really know that students are motivated when they ask if they can come to science instead of art," said one of the teachers. "Technology has increased students' enjoyment of science tremendously."*

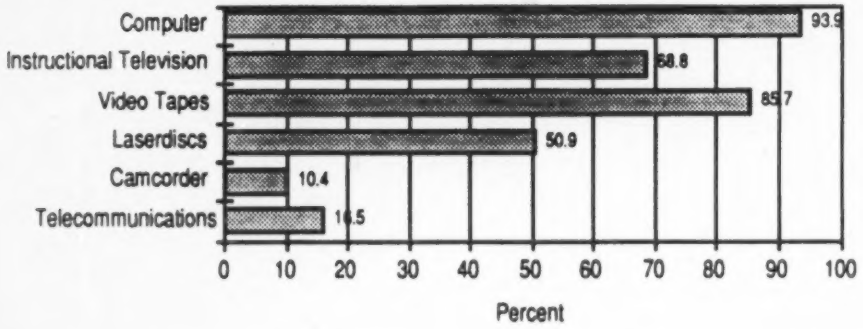
Findings from the Student Survey: One hundred thirty-five surveys were returned from Skyline Elementary School, representing 25 percent of the 542 students directly served by the project. Students in grades three through six were surveyed.

Technology Use: Project TOPS made extensive use of a wide range of technologies (see figure 5). Almost all students used computers at least once per week and 58 percent used them on a daily basis. Students also reported frequent use of instructional television, video tapes, and laserdiscs. Telecommunications use, though still less frequently used than the use of other technologies, was much higher than in other Level II projects.

Fifty-nine percent of the students use the school's computer lab. Many also stated they use computers in the library (23%) and after school (13%). Thirty-six percent of the students have computers at home. Almost half the students stated they use computers to do reports and assignments and three quarters use them to play games.

Even though science is the target subject of the project, technology is used in all areas at the school. Computers were used by students in English/reading/writing (76%), math (59%), science (42%), and social studies (7%).

Figure 12: Percent of Students Using Technology at Least Once per Week



Impact of Technology: Most students (78%) stated that their problem solving abilities had been significantly improved through the use of technology. Two thirds of the students reported a significant increase in writing skills. Smaller, but still substantial, improvements were reported for study skills and reading abilities.

Most of the students believed their grades had improved as a result of using technology. Only five percent stated their grades had not been improved. Science and English/reading/writing grades were stated to be improved the most, followed by math and social studies. Most of the students also enjoyed these classes (especially science) more after the introduction of technology.

Other significant areas of improvement reported by students were: ability to work with other students (90%), attitude and interest in school (75%), and self esteem (75%).

Student Comments: Students were asked to describe how the increased use of technology at their schools had made a difference for them. A large number of students reported that technology made school easier and more fun. For instance, one sixth grader stated: "Textbooks are boring; hands-on experiments are a better way to learn science and technology." Another felt that "with technology you learn faster." Many reported that technology use exposed them to new ideas and concepts they would not have otherwise gotten. One student wrote: "It helped me to learn lots of things I didn't know, it gave me results for my future, and it even helped me when I didn't understand." A few students mentioned their grades in science had improved after the introduction of technology. A sixth grader wrote: "My grade has gone up because I used what I learned from technology to answer questions. I have been participating in a lot of science projects because they are fun and it will be useful when I'm grown-up." One fifth grader appreciated the ecological benefits of technology use: "I like having computers in our classroom because we don't have to waste paper by typing on it."

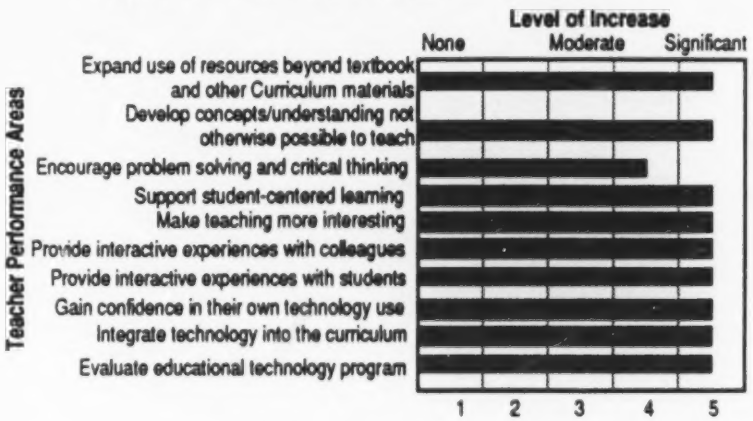
B. Staff Outcomes

Project TOPS met most of its staff development objectives. The projects were asked to rate observed degree of change in teachers as a result of the staff development activities.

> *"I took an all day workshop on use of the laser player and disks. Now I'm staying after school each day and rewriting all my lesson plans to incorporate what I've learned."*

Figure 13 shows the extent to which the project staff reported improved teacher performance in a variety of areas.

Figure 13: Effects of Project on Teachers



The project provided resources and training on how to use them School-wide activities became more involved and raised the interest level. Teacher planning days provide interactive experiences for teachers with colleagues and gave them more time and opportunities. Overall, the project increased staff usage of technology in the classroom to a significant degree and it is the director's opinion that important benefits for teachers were attained and justified the effort.

C. Program Outcomes

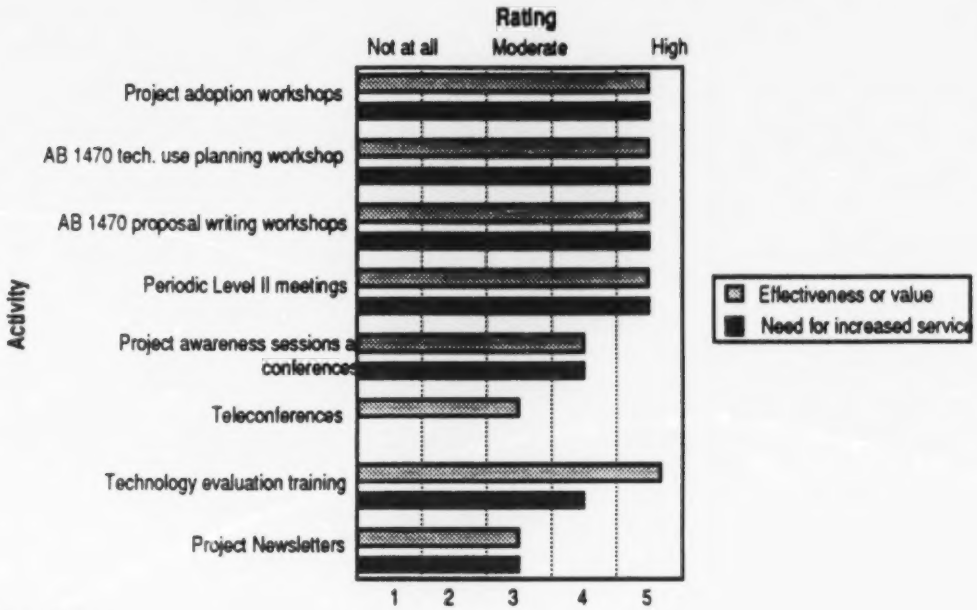
Project TOPS improved the management and coordination of learning resources, increased staff familiarity with and use of the California curriculum frameworks. Most of the aspects of Project TOPS were incorporated into the SIP and are likely to become institutionalized. Other technology uses have developed at the site since the implementation of the project specifically because of the project.

> *"Project TOPS has improved both science and technology use throughout our district," said the principal of the school. "Everyone is interested in what has been happening at Skyline, and of course they want to be involved too."*

D. Impact of Services

The project directors were asked rate the perceived effectiveness or value to participants of each service offered by the project. Figure 14 shows the results from Project TOPS.

Figure 14: Effectiveness and Need for Services



E. Cost Benefits

Given the original objectives and expectations of Level II MTS project dissemination, the project director believes that the funding level for the project has been somewhat insufficient. It would not have been possible for the project to accomplish what they have without the existence of in-kind funding and volunteer assistance.

If funding were to stop Project TOPS would have to discontinue. In view of the financial status of the district, only a minimum amount of training would be provided except for schools which could absorb all costs for in-service. Overall, the director feels that the Level II dissemination model is a cost-effective approach to providing information and training about exemplary models to other districts.

F. Unanticipated Outcomes

Among the unanticipated findings encountered by project were:

1. The students developed a highly successful video club which has helped to link the school with various service organizations, parents and the local cable company.
2. Some individual teachers demonstrated exceptional creativity in developing five videotapes for teacher training.
3. The continued willingness of the staff to host the many visitors at Skyline has been very gratifying.
4. The program has provided recognition for the entire school community, enhancing confidence, self-esteem and motivation to excel.

> *"Both students and teachers have taken a lot of pride in what they're doing, which has created a lot of esteem. You can't just 'create' it overnight; it has to happen naturally. Having visitors come to the school, not just other school people who want to see what we're doing, but photographers who want to film the project, news people who want to write articles about us, and so forth, has provided a self-esteem for staff and students that we could never have mandated to happen."*

5. As part of the restructuring, a school technology committee was created and met monthly to provide guidance for and monitor the use of technology at the school site.

X. Recommendations

The Project TOPS director offered the following suggestions to improve the Level II MTS dissemination model.

1. At least one site coordinator with limited or no teaching duties to sustain growth in the use of technology, update and prepare training materials, be available for consultations, visits, and planning and be available to travel throughout the state.
2. Strong support for the project by the school and district administration. They must believe that the project has value for the entire school and district.
3. An individual at the district office who will assist the school site staff in managing the project.
4. Sufficient resources to provide in-service for the entire school staff.
5. District commitment to maintain facilities and equipment and to effect repairs in a timely manner.
6. An organizational structure to provide information, materials and support to other educators.

The director also offered the following recommendations for the project in general:

1. The model technology schools should maintain their cooperative efforts through AMTEC.

> *"One of the things that has really worked best for us is having a broad base of personnel involved in running the project. Any project is a lot of work, especially when only one or two people are doing it all. All the details that have to be attended to tend to bog you down. It's been a real plus for our project that that hasn't happened."*

2. A mechanism should be in place to require schools to meet stated commitments in their proposals, using the services of the model schools as proposed.
3. A greater portion of the site based grants should be earmarked for staff development and for adoption of model projects.
4. Site based grants should be implemented over a two year period providing more time for planning and implementing in-service training.

5. The California Subject Matter Projects should be encouraged to seek out school sites using technology.
6. Evaluations of dissemination activities should be done by outside contractors such as Far West Laboratory.
7. AB 1470 School-Based Grant funding should not supplant Supplemental Grant funding. The fixed amount per site should be increased to $5,000.
8. Dissemination funding for Level II MTS Projects should not require matching funds or be considered as one of the categories for Supplemental Grant funds.
9. Incentives should be provided in the grants to encourage all state agencies to link up.
10. The state should set standards for dissemination activities.

Project HAT

"We started with nothing in the way of technology at Carnegie Middle School, except for two Tandy's" indicated the principal. "Then we applied for a small grant and added more computers. That got our interest, and we wanted to do more." Teachers took responsibility at this point to spearhead the next effort, which because of the new social studies framework coming out, seemed a natural for AB 1470 and an integration with technology.

With strong district support and two teachers (one who became the project director) leading the way, a 'bottom's up' model was developed, targeting teachers in the social studies department and student learning. The primary goal of the project focused on 'exemplifying the influence that information technologies have on the study and understanding of geography, economics, and history (hence the acronym HAT which stands for history and technology). A strong staff development component was included because, as the director commented, "We recognized that teachers were going to be the catalyst between technology and curriculum." In actuality, much more was accomplished than what was originally anticipated, strengthening the entire social studies program and impacting teachers throughout the department. "Our project injected something new into the history program which caused a re-ordering of the way teachers did things, not only with curriculum, but with their method of teaching." Ultimately, of course, students were the ones that benefitted most, engaging in a process oriented approach, rather than a product one. "We developed an entire 'how to,' 'what to' packet of materials and we teach students a process, a procedure, not just the end product, the data," stated the principal. "Our emphasis is on the student of the twenty-first century which will require totally new skills from what we know today."

Not everything flows smoothly in a project, and HAT has been no exception. Last year, due to a change in priorities for the director, the directorship of the project was passed to two teachers in the school who were willing to assume the workload. "Naomi had a new baby," indicated one of the new directors, "but she was also tired. It's very hard to run a project the scope of this one on limited funds and with limited time. She had so much to do, plus conduct her classes. It was really a lot to expect from anyone. That's one of the reasons that we're working together." With two working now, instead of one, the staff anticipates seeing the project expand to other curricular areas and promote an interdisciplinary approach. The principal summed up the expectations nicely: "Each one of our classes should become more 'life-like,' with one idea blending into another and abandoning the breaking down into discrete subjects that has occurred in the past."

I. Background Information

A. Project Background

Project HAT is a middle school history-social science project employing interactive laserdiscs, a networked computer laboratory, digitizer, VCR, camcorder, CD-ROM, ITV and satellite programming in developing a variety of teaching strategies and model lessons to "make history come alive."

B. Development/Demonstration Site Demographics

The project development/demonstration site for Project HAT is Andrew Carnegie Middle School located in the suburban community of Orangevale in the San Juan Unified School District. Carnegie Middle School's 1990-91 enrollment was 1000 students in grades 7-8. The demographic information on the students was not provided. At Carenegie, 17 core teachers participated in the project. HAT also provided leadership and training to five schools within the district and served as a model and trainer for 26 schools throughout California.

C. Project Description

The major objectives and expected outcomes of HAT were:

1. To design, develop and disseminate information and materials that integrate technology into the state social studies curriculum framework.

2. To support AB 1470 schools which have adopted or adapted the HAT model curriculum project.

The major activities reported for staff were:

1. To provide in-service training for adopting/adapting AB 1470 and other schools;

2. To provide personal support and communication with participating sites;

3. To develop lesson plans which support the state curriculum framework using various technologies.

The students also were active participants in the project. The major student activity was the development of Video Reports based on research projects. Examples included video documentaries, newscasts, comparisons and contrasts of historical events with modern day social and political events.

The results and outcomes included:

1. All participating schools received numerous contacts from the project staff;

2. An estimated 90% of adopting/adapting schools have received the "hands-on" in-service training and resource binder that were developed by the project staff;

3. All Carnegie Middle School students received a week-long "Basic Technology Training" course;

4. Information has been disseminated to a wide audience through presentations at various conferences throughout the state.

II. Planning

A. Planning for Project Development

The project director was asked to identify project planning elements that led to the development of their projects. The project director reported that Project HAT was developed primarily to meet the following needs and interests. For the staff, it was seen as an opportunity to try something new building on an interest to explore technology applications; to gain additional funding for the school to purchase

equipment; The staff would benefit from increased staff development and there would be increased school recognition.

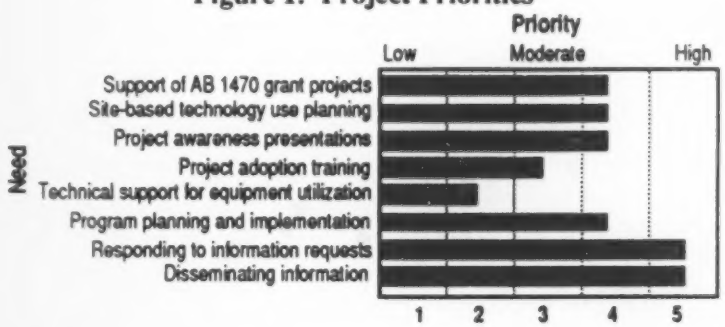
The student benefits anticipated included improved student learning and attitude; increased student-centered learning opportunities and increased student technology use. The staff believed that the project would make teaching more exciting and would result in an enhanced curriculum.

A committee was established for this project whose main functions were proposal development and implementation. Technology use is written into the school improvement plan of Carnegie Middle School, but a separate technology use plan was written for this project. The actual number of participants involved in planning and implementing the project included: twenty teachers, three school administrators, one classified staff member, two students, and two district personnel.

> *"Our SIP committee came into being at about the same time as we received AB 1470 funding. We encouraged SIP to include a technology component into their plan; they did. The relationship between SIP and AB 1470 has been much more than a handshaking process, with benefits for both as a result."*

The project director was asked to indicate the emphasis given to major educational and program priorities during January 1990 - June 1991. Figure 1 shows the rating assigned to the different priorities by HAT.

Figure 1: Project Priorities



B. Modifications to Original Proposal Plan

The project directors were asked to report any modifications of the original proposed plan that were deemed necessary after implementation began. Project HAT did not report that any changes or modifications were necessary.

> *"Originally, we were going to apply the Video Encyclopedia to the curriculum using model plans we developed. As with any project, you have to make mid-course corrections, and we found there was enormous fall-out as a result. For example, we had to reconfigure our lab locations and add more technology than we had planned."*

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III. Content

A. Areas of Focus

History-social science was given major emphasis in the curriculum by Project HAT, with secondary emphasis given to English-language arts. In school-wide areas, general technology use and technology in the classroom were emphasized, with secondary attention given to professional development. In process areas, primary attention was given to critical thinking, cooperative learning, and study skills, with self-esteem and interest-attitude stressed secondarily.

B. Technology Applications

The major types of technology used in the project were computers, laserdisc/interactive video, audio-video production, LCD panels and video projectors. Secondary attention was given to instructional television, cable television, satellite downlink for ITV reception/distance learning, CD-ROM, technology for the handicapped, telecommunications, and networking of computers in the classroom. The main types of software used by the project were word processing, hypermedia/multimedia, electronic encyclopedia/reference. Secondary importance was placed on integrated learning systems, computer assisted instruction systems, graphics programs, and telecommunications software.

> *"We chose the technology we did because we're working with visual areas in both world history (fall of the Roman empire to the Age of Enlightenment, Japan, and China) and U. S. history (Colonial America to WWI). Using this equipment meets the students' needs in an interesting and unique way, and it makes them engage in the process, becoming an active participant, rather than a passive one."*

The project director was asked to list the five most widely used software, video, laserdisc, and/or CD-ROM titles and rate the effectiveness of each title in supporting the project's objectives. The laserdisc programs included: CEL *Video Encyclopedia of the 20th Century*; *GTV* and *Election '88*, all of which received the highest level (5) of effectiveness. The software program *Carmen Sandiego* received the highest level (5) of effectiveness; and the CD-ROM *Compton's Encyclopedia* program received the highest rating (5) of effectiveness.

IV. Project Implementation

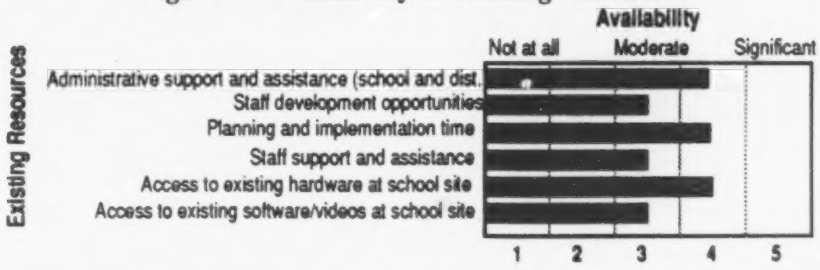
A. Implementation Schedule

The project directors were asked to report any modifications necessary to the proposed implementation schedule. Project HAT did not report any modifications.

B. Project Management and Implementation Resources

A classroom teacher was assigned to manage the project at the school site with assistance provided by a colleagues and a district resource person. Figure 2 depicts the availability of existing resources.

Figure 2: Availability of Existing Resources



Project HAT was coordinated slightly with other projects in the district, namely GATE, and Partnership. Both students and teachers felt there was a moderately significant equitable access to resources at the project site.

C. Staff Development and Technical Assistance

The district office, which provided trouble-shooting and problem solving, was the main source of technical assistance.

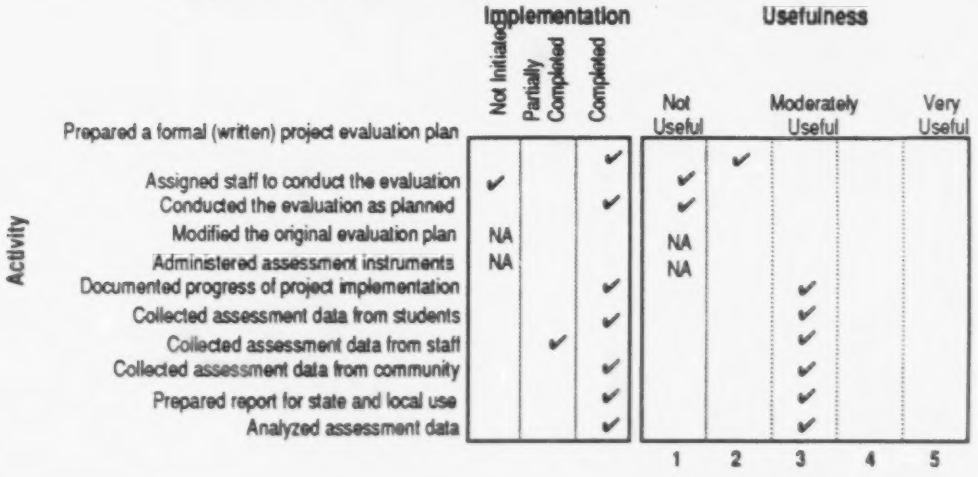
Project HAT conducted forty-four visitation workshops, fourteen grant writing workshops and six AB 1470 grant writing seminars. There were two Level II Adoptees workshops, one CTP Scholars' Workshop, two California State University Sacramento Educational Technology Methods classes, and a Summer Technology Institute. There was staff development at Carnegie, and in-services at John M. Muir School, Bayside Middle School, Contra Costa and Solano County Offices of Education, Bancroft Middle School, Arcade Middle School, Livingston, McClatchy High School, Inyo, and Kerman Unified Schools. The workshops lasted an average of one day and served an average of 65 people each. Nearly all covered technology use planning in-depth, and about half were school-initiated, and covered AB 1470 grant support.

> *"Our staff development occurred in three phases. To begin with, we had to all have an introduction to the technology. You know, the basic stuff: what exists, what you do with it, etc. Then we had to learn how to use it all. Finally, we got to use our imaginations to take what we had just learned and integrate it into what we were doing in our classrooms. It was quite a process, but probably the best way to go about it."*

D. Evaluation Procedures

Projects were asked to state the level of implementation and rate the usefulness of a series of evaluation activities. Figure 3, below, depicts this information for Project HAT.

Figure 3: Implementation of Evaluation Activities



The project evaluation plan included on-going assessment activities (formative evaluation) that were implemented as stated in the proposal. The contract consultant was primarily responsible for the evaluation.

Quantitative methods used to evaluate Project HAT included student and teacher surveys. Qualitative methods included: student interviews, teacher assessment of student work, classroom observations, teacher interviews, and workshop evaluations. Written evaluations were completed for all workshops by workshop participants.

> *"Because we're a social studies project and have dedicated ourselves to history, we have precluded a lot of teacher involvement from other disciplines. Lots of teachers would like to be involved, but can't. In the future, we will include them.*

E. Extent of Implementation

The original project activities, which included the Summer Training Institute, individual training in-services, school visitations and the development of a resource binder, were all completed as planned. The in-services and visitations will be repeated in 1991-92, as will the basic technology training course which was added to the original plan.

F. Staff Activity

The majority of staff effort was dedicated to project adoption workshops, technology use planning workshops and proposal development workshops. The project directors spent an estimated 20% of their time providing assistance to adopters; 15% each conducting awareness workshops, preparing dissemination materials, and attending meetings; and 10% each on project management, preparing reports and AB 1470 support. Figure 4 shows level of AB 1470 support activities.

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Figure 4: AB 1470 Support Activities

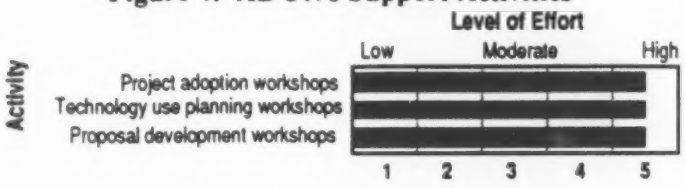


Table 1 shows the estimated number of publications produced by Project HAT

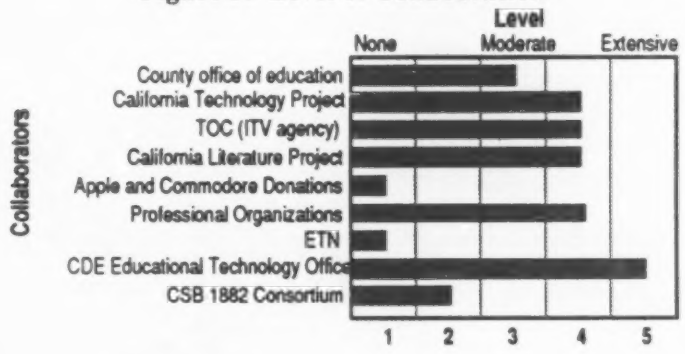
Table 1: Project Publications

Publications Produced or Distributed by Project	Number of Publications	Number of Copies Printed
Workshop Schedules	50	NA
Announcements, Brochures, Flyers	30	NA

G. Collaboration with Other Agencies

Project HAT collaborated with other agencies and projects. These included the CDE, CTP, ITV agencies, business and industry, professional organizations, including CUE and ACSA and the California History Project. Figure 5 shows the level of collaboration with other agencies.

Figure 5: Level of Collaboration



H. IBM California Education Partnership

Project HAT plans to showcase the IBM equipment and software to those who visit or receive in-service training. While this equipment and software is intended to add one more dimension to the technology demonstration lab, it did not arrive in time to be used in a productive manner. No training date has been set and no software has arrived for investigation.

V. Project Dissemination

A. Marketing Efforts

The project directors were asked to describe the marketing strategies they used to inform other schools in California of their project and available services and resources. Project HAT focused their marketing efforts on brochures, conference presentations, visitations, CTP teleconferences, AMTEC network, the CDE produced video, district and school site presentations, the CTP Quarterly, publication articles, AB 1470 grant information and training, through visits to school sites and through "word of mouth."

Conference exhibits were used to a moderate extent. Figure 6 displays the estimated impact of the various marketing strategies.

Figure 6: Impact of Various Marketing Methods

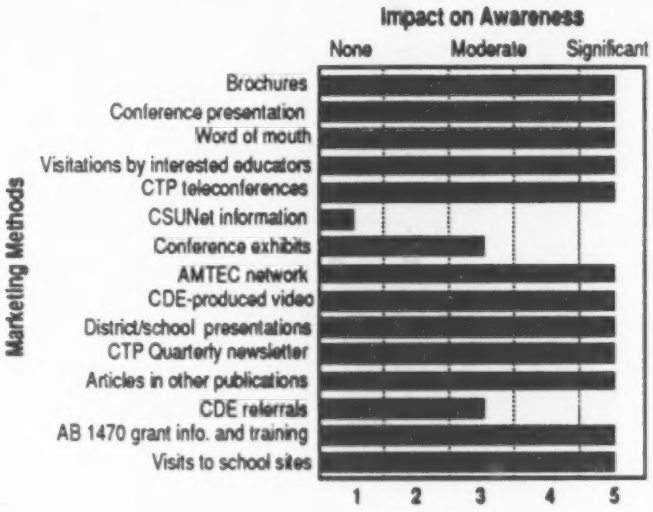


Table 2, below, shows the number and cost of products produced for the dissemination and adoption of Project HAT between January 1990 and June 1991.

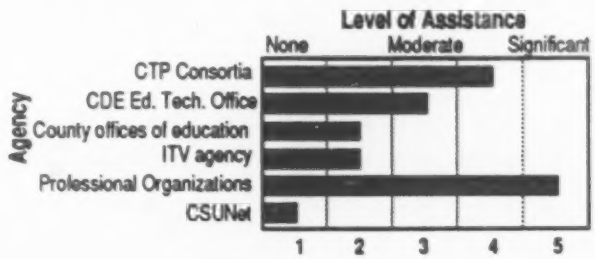
> *"Our being at so many places, making presentations, as well as doing the grant writing workshops, really got the word out about our project."*

Table 2: Dissemination Products

Products	Quantity Produced	Cost
Project specific brochures	200	$200
Contribution to AMTEC brochures	20	NA
In-depth information portfolio	3	NA
Training guides	150	$100
Supplemental training materials	500	NA
Project-produced video	53	$300

The projects were asked to rate the support systems that actively helped disseminate information and training. Figure 7 shows the assistance provided by a variety of these services to Project HAT.

Figure 7: Dissemination Support Services



B. Dissemination Evaluation

There was a qualitative assessment of the impact of dissemination activities. All participating schools received three mailings which included evaluation materials. Approximately 50% have returned the information. All of the in-service training sessions were evaluated by participants.

C. Adoption/Adaptation

In order for another site to be able to state that it had adopted Project HAT, three criteria should be met: the use of laserdiscs, student videos, and alignment of their program with the California Framework. The first two criteria are met most frequently. The most frequently adopted project elements included the use of technology in the curriculum, student videos and laserdisc technology.

> *"Having a Level II project creates a real pyramid effect when it comes to other schools. They can come here to observe, to get purchasing information, curriculum information, technology use information, and a lot more. This is the value of these sites -- the Level IIs. It's all in one place."*

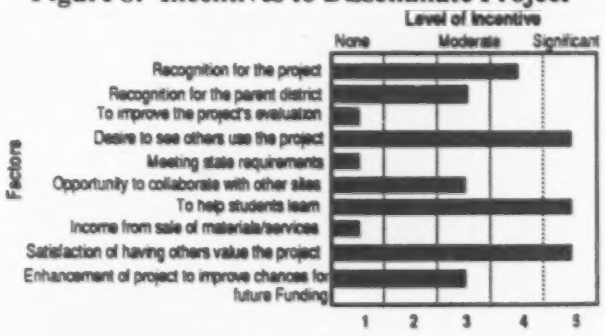
The project has established formal agreements with adoption sites regarding the implementation of the minimum criteria or use of specific services. Consequently, twenty-eight individual schools were contacted by telephone and monitored.

Of the 26 sites that adopted Project HAT, twenty-four were AB 1470 grant recipients. Eleven of the sites received formal on-site training with follow-up. Six of the sites have most of the major element s replicated at their sites., three have at least one major element of the project in place. So far, ten of the schools have demonstrated an exemplary adoption of the program.

> *"Sometimes we have four or five schools here a week; many of them are not even adopters, but they come to see what we're doing. When schools can see this site, this center, and how we have utilized technology in our curriculum, they are really excited. We are such a resource to the state."*

The project directors were asked to indicate which factors were incentives for them to encourage other districts to adopt/adapt their project. Project HAT was significantly motivated by the desire to see others use the project, to help students learn and for the satisfaction of having others value the project. Recognition for the project was also a strong motivator. Recognition for the parent district, the opportunity for collaboration and future funding were moderately important. The table below displays the levels of incentive factors.

Figure 8: Incentives to Disseminate Project



VI. Project Support Resources

A. Services

The school district assigned a part-time staff person to assist with Project HAT. This person was helpful in planning and implementing the project. ITV was very helpful with workshops. The California Technology Project was used as a resource and local vendors were also helpful as business partners.

> *"One of the greatest support services to us has been from the CDE. I always felt they were a 'phone call away.' Whenever I called, I got all the information I needed. The people I talked to were personable, open, warm, friendly, concerned, and interested in keeping us on task and working. Their support was invaluable."*

VII. Funding Support

A. Funding Sources

The project budget was not submitted. However, the project director indicated that in-kind support was received from a variety of sources amounting to approximately $84,000. The fiscal agent provided $41,000. The California Technology Project provided in-kind teleconferencing worth about $1,000. ITV agencies presented at various workshops for about $500 and Commodore and Apple provided software worth about $1,200.

B. Project Expenditures

The project expenditures were not submitted to CETAP.

VIII. Supporting and Impeding Factors

A. Facilitating factors: Project implementation was facilitated by the availability of staff and/or consultants to provide professional development, knowledge of effective dissemination strategies and incentives to disseminate outside the district. Of slight help was the interaction with the California Technology Project, technology manufacturers/vendors, colleges and universities, business and industry, and packaging materials for dissemination.

B. Impeding factors: Project implementation was impeded by the project director's being only part-time. The level of state funding, the evaluation expectations for dissemination and and the lack of geographically defined areas to serve also were thought be have impeded the project. The most negative impact, however, was the loss of the district's Supplemental Grant funds.

> *"When it comes right down to it, the things that get in the way are time and money. There's never enough of either."*

In light of these factors, the project will make some modifications for 1991-92. These include in-services being held on-site. The project coordinator/director will not be a part-time teacher.

IX. Project Outcomes

A. Student Outcomes

Findings from the Self-Assessment Inventory: The project director of Project HAT reported that student objectives were met. The most significant improvements were seen in the students' interest, proficiency and frequency in the use of technology. Problem-solving and higher order thinking skills, knowledge and skills in subject areas emphasized by the project, and student initiative were also areas where gains were felt to be of most significance. Of slightly less significance were classroom behavior and study skills, and students' interest in school. Moderate increases were documented in attendance/punctuality, report card grades, achievement test scores, and quality of completed student work.

> *"I had a student in my class. He wasn't the best; in fact, he was a real pain most of the time. We were demonstrating the laser player and I asked students for a topic. Up he pops and says, 'boxing.' I pulled up what I could, keeping my fingers crossed the whole time. Up cam lots of 'turn of the century' clips. You should have seen his face; his nose was pressed to the screen non-stop. We all acknowledged him and his interests. I think he felt valued and that his interests were important. It made a difference in his behavior the rest of the year. I don't think this boy has ever been the same."*

All students are trained during the "Basic Technology Course" to use sophisticated equipment with ease. A wide variety of very interesting projects have been completed by students of all ability levels, and the lab is full every period including lunch periods. Considering the overall funding and effort of Project HAT, the project director feels that important benefits for students were attained and justified the effort.

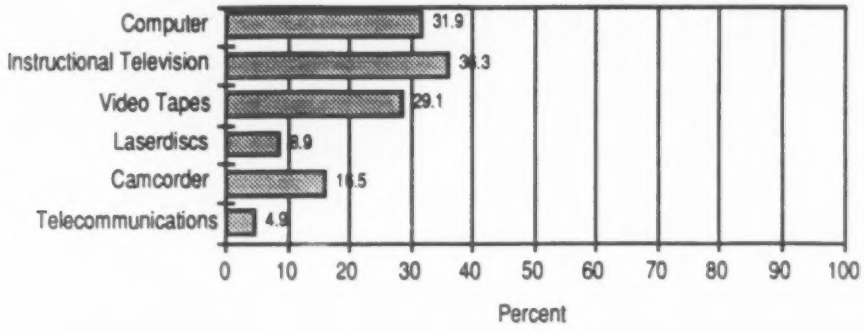
Findings from the Student Surveys: Of the one hundred twenty-two surveys from Carnegie Middle School, representing 12 percent of the 1000 students served by the project, sixty percent of the students surveyed were seventh graders and 40 percent were in eighth grade.

Technology Use: Computers, ITV, laserdiscs, and camcorders were all used extensively by Project HAT. However, as shown in figure 2, they were used less frequently than at the other Level II projects, tending to be used intensively for specific projects rather than weekly or daily. Computers were used at least once per month by 96 percent of the students, ITV by 91 percent, video tapes by 88 percent, laserdiscs by 74 percent, and camcorders by 61 percent.

Three quarters of the students surveyed use computers in the Carnegie computer lab. Twenty percent use the computers at lunch and 16 percent use the lab after school. Fifty-nine percent of the students have computers at home. Almost three quarters of the students stated they use computers to do reports and assignments and about the same number report they use computers to play games.

Computers were cited by many students as being used in history-social science (67%), the main focus of the project. However, they were most often cited as being used in English, writing, and reading instruction (76%). Computers were used to a lesser extent in science (23%), math (19%), art (11%), and computer education (10%). Figure 9 shows the percent of students using technology at least once per week.

Figure 9: Percent of Students Using Technology at Least Once per Week



Impact of Technology: Writing was the area where students felt their abilities had been most improved by technology – two thirds felt they had improved at least a little and 37 percent noticed significant improvement. A similar but slightly smaller improvement was seen in problem solving. Few of the students felt that computers had significantly improved their abilities in reading or studying. The lower improvements reported in these areas for this project may be due to the social science and multimedia rather than English and word- processing emphasis of the project.

Seventy-two percent of the students believed their grades had improved as a result of using technology. English/reading/writing grades were stated to be improved the most, followed by social studies, science, and math. A majority of students stated that they enjoyed history/social science (72%) and English (69%) more as a result of using technology. Most students reported that they did not like math or science any better after the introduction of technology (computers were used much less in these areas).

Student Comments: Students were asked to describe how the increased use of technology at their school has made a difference for them. The most common remark, made by 22 percent of the students, was that "working with computers is fun." Many found that laserdiscs and camcorders made learning more enjoyable. One student stated: "I enjoyed working off the laserdiscs. It made school more interesting. I also enjoyed learning how to use the camcorder." Another replied: "I love using camcorders to watch my friends learn about history on the laserdisc." Students seemed to be aware that they were acquiring valuable skills which they could use later in life. A seventh grader wrote: "It gives me a better idea of the technology today and what some people get to use every day at the place where they work." Another said: "It may someday improve my chances to get a good and fulfilling job." Some replied that, though they enjoyed the experience, technology would make a bigger difference if they were able to use it more often.

B. Staff Outcomes

Project HAT met most of its staff development objectives. The projects were asked to rate the observed degree of change in teachers as a result of the staff development activities. The most significant changes occurred in the teachers' expansion of the use of resources beyond the textbook, their support for student-centered learning, and their integration of technology into the curriculum. The teachers' encouragement of problem-solving and critical thinking skills, their increased presentation skills and confidence in their ability to use technology were also rated highly. Many of these results were gained because the highly visual materials used in this program were not available in any other format.

> *"As teachers, we were able to expand our comfort levels beyond what many thought was even possible. We have a greater willingness to try new things, to be innovative. We've all benefitted by having more to use to make our teaching exciting and interesting. I really feel like we are motivating students to learn."*

To the high degree to which the project led to increased staff usage of technology in the classroom the project director felt that important benefits for teachers were attained and worth the effort put forth.

C. Program Outcomes

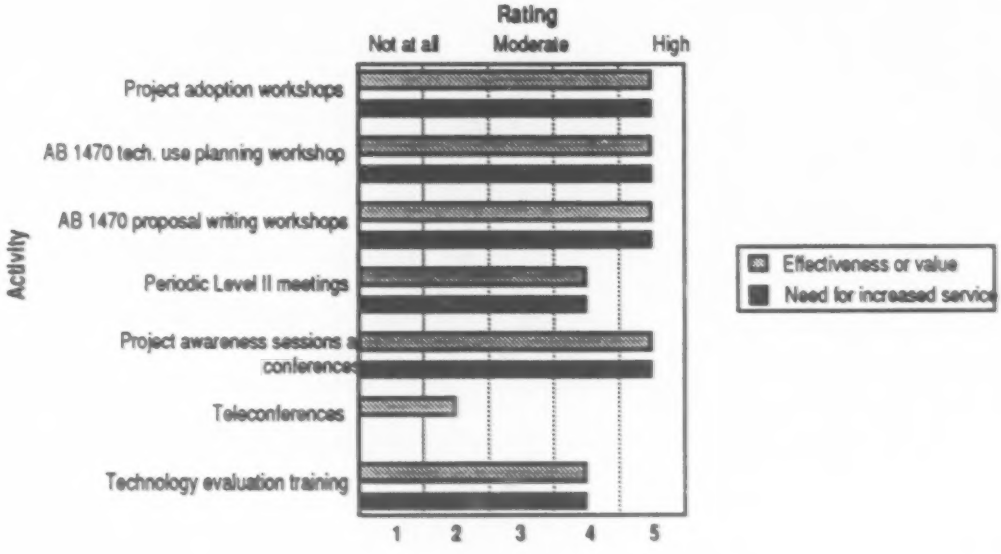
Project HAT improved the management and coordination of learning resources, and significantly increased staff familiarity with and use of the California curriculum frameworks . Most of the aspects of Project HAT were incorporated into the school improvement plan and it is likely to become an integral part of the school instructional program. Project HAT was seen as the impetus for the development of other technology uses at the site. The science department has expanded with classroom computers., and an industrial technology classroom has been developed. In the larger community, local high schools are being pressured by parents and students to integrate more technology into their curriculum.

> *According to the principal at Carnegie, "A lot of social studies teachers were asking, 'What next?' They were tired of the same old methods they'd been using for years. Technology was viewed as the 'what next' -- but it was an opener of a whole new way to teach social studies. It has impacted the program tremendously."*

D. Impact of Services

The project directors were asked to rate the perceived effectiveness or value to participants of each service offered by the project. Figure 10 shows the results from Project HAT.

Figure 10: Effectiveness and Need for Services



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E. Cost Benefits

Given the original objectives and expectations of Level II MTS project dissemination, the project director believes that the funding level for the project has been adequate. It would have been possible for the project to accomplish what it has without the existence of in-kind funding and volunteer assistance.

If funding were to stop, Project HAT would have to discontinue. In view of the financial status of the district neither personnel nor equipment could be suitably maintained Overall, the director feels that the Level II MTS dissemination model is a cost-effective approach to providing information and training about exemplary models to other districts. The networking and teacher-to-teacher contact has been extremely positive and productive.

F. Unanticipated Outcomes

There were several unanticipated outcomes from Project HAT. These included:

1. "Hard to motivate" students showed the most interest and the most gains in learning, behavior and self-esteem.
2. Once there was time for hands-on training, staff confidence and comfort levels rose. Having a technology person available increased the use of equipment.
3. This was almost too ambitious a project to expect to serve the whole state. The project staff stated that they "are exhausted."
4. The staffing level was inadequate. The project needs a full-time coordinator to facilitate the needs of others both on-site and throughout the state.

> *"One very exciting thing that has happened has been the parent involvement from other schools. Many of them come to our Back to School Nights to see what it is we're doing. Then they go back to their schools and apply pressure to get technology implemented."*

X. Recommendations

The Project HAT director offered the following suggestions to improve the Level II MTS dissemination model:

> *"We're still in an evolutionary state. Ultimately, we need the large technology centers, but the best of both worlds will be having the hardware get out into the classrooms as smaller mini-work stations -- having the center and the classroom stations. We need it all."*

1. A full-time coordinator to tie all the "ends" together.
2. Continue to do "hands-on" in-service trainings at Carnegie lab with the purpose of having all be able to use equipment, since adopting schools have very little equipment.
3. Continue to seek business partnerships. Public education simply cannot keep up with the new technologies. Tap parent clubs and student body funds where possible.
4. Work more closely with Subject Matter Projects.

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5. Simplify forms. Ask for realistic purposeful information. Respect the time of overworked educators.
6. Realize that AB 1470 funding is a must if the concept is to continue to grow.

The director also offered the following recommendations for the Level II MTS program in general:

1. The state should provide more information about the importance of integrating technology to prepare students for the future.
2. The state should continue to work with adopting/adapting sites.

Project TIME

Several years ago, a few social studies teachers at Santa Barbara High School developed a high interest in technology which prompted them to apply for AB 803 funding when it was offered by the state. This led to another, later application for AB 1470 monies which resulted in the current Level II status of the school. The purpose of the teachers' efforts, right from the beginning, was to apply new knowledge, equipment, and methods to the social studies curriculum. "We wanted to motivate, enliven, and revitalize teaching so the same effect would take place with student learning," commented the project director. "We wanted to transfer much of the teaching/learning process from the teacher to the students and have them take greater responsibility for their eduction." With funding, a variety of equipment, software, and other supportive programs were purchased. Trainings at the school were implemented and the new social studies frameworks were integrated with the technologies. Although many of these initial efforts seemed to result in repetitive trial and error, hit and miss attempts, the teachers, when they look back over the years, are unanimous in their feelings that what they set out to accomplish has been achieved.

"Ultimately, every teacher in our department, and many others outside the department, have had awareness training in a wide range of technologies," indicated one of the teachers. "They have also had a tremendous amount of training in how to best use the technologies with curriculum," indicated another. As a result of the hard work put in to achieve these results, the current new principal is pleased and ready to provide support in any way possible. "It's almost scary when you see how much can be done in the classroom when trained teachers use technology to stimulate their teaching and lessons. There is no question in my mind that technology can be a big aid in keeping students interested, in school, and successful," he commented.

This pledge of support is a shift in the administration's perception of what technology can accomplish at Santa Barbara High: for many years district administrators expressed sentiments less than motivational and complimentary, feeling that technology was "just another passing phase," and something that would create nothing but burden for an administration already overloaded with tasks. "One of the district administrators," said the director, "made the following comment when I asked if I could attend a technology seminar: 'I don't send my teachers to these things because they'll just come back and want to do new things; I can't afford all these things teachers want, and I don't have the time to find the funds.'" The teacher, along with three others, attended the seminar using their own funds, and the rest has been history. Seeing the impact on students over the course of the last four years, these teachers are immensely pleased. "We've come so far, but we still have so much to do," indicated one. "We could really use another $200,000 or $300,000, right now, that's not restricted to social studies use," stated a twelfth grade student, summing up well the feelings of both teachers and students. "Like the start of the project," said the director, "one thing seems to lead to another and another. We just keep jumping the hurdles because it's something we believe in."

I. Background Information

A. Project Background

Project TIME (Technology in Modern Education) is a history-social science project for grades 9-12 which produced video study guides and tests, spreadsheet templates, databases of test questions and lessons employing interactive video, laserdiscs and HyperCard stacks to enable students to assume "more direction for their learning."

B. Development/Demonstration Site Demographics

The project development/demonstration site for Project TIME is Santa Barbara High School in the Santa Barbara High School District located in Santa Barbara – a predominantly suburban area. Santa Barbara's 1990-91 enrollment was 1,935 students in grades 9-12. The ethnic make-up of the school was predominantly Caucasian (53%) and Hispanic (41%) with some Black (4%), Asian (2%), and Native American (1%) students. All schools in and outside of the district received services and technology-based resources from the project upon request.

During the January 1990 through June 1991 funding period, Project TIME directly served the 1,935 students in grades 9-12 at the project site and also served students in other schools and grade levels in and outside of the district. Nineteen percent of the students served were in ESL programs, fourteen percent were in GATE, nine percent were enrolled in the Chapter I program, eight percent were immigrant students, and seven percent were in special education.

C. Project Description

The major objectives and expected outcomes of Project TIME were:

1. Establishment of an innovative, technology-based program for history-social science.
2. Improvement of student and faculty technology literacy.
3. Acquisition of advanced hardware and software for the training of students and faculties.
4. Dissemination of the lessons learned at Santa Barbara High to other schools – regardless of their being adopters or not.
5. Help other agencies, such as the California Technology Project (CTP) to accomplish their goals.
6. Establish the project site as a site for future development and training.

The major activities reported for staff and students were:

1. Continued exploration of technologies and their introduction into the curriculum.
2. Helped faculty to learn the use of technology and use it in their classes.
3. Held technology institutes and workshops on-site and at other sites.
4. Gave demonstrations and awareness sessions around the state.
5. Helped county schools and the CTP to hold teacher training sessions.
6. Helped plan the Technology Training Center for the Santa Barbara Area.

The major results/outcomes reported for the project were:

1. There will be a Technology Training Center that will survive the grant.
2. Implementation of the state curriculum framework with a strong technology component.
3. Increased technology literacy among faculty, staff and students.
4. Establishment of an after school Migrant Education technology program.
5. Diffusion of technology throughout the school and district.
6. Many teachers changing from lecture-based to more student directed learning.

II. Planning

A. Planning for Project Development

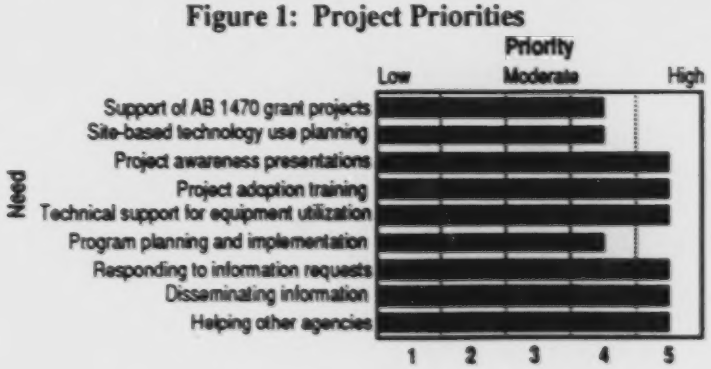
The Project TIME was developed primarily to meet the following needs and interests: to try something new, to explore an interest in technology, to gain additional funding for the school, to increase technology use, to improve student learning, to stimulate restructuring, to make teaching more exciting, to enhance the curriculum, to facilitate student-centered learning, to acquire equipment, and to provide for staff development.

The project planning committee was involved in implementing the project and advising on project changes. This committee was not used during the dissemination phase of the project (1990-91). A new technology use plan was developed for the implementation of the project at Santa Barbara High. Ten teachers, two school administrators, six students, and four district administrators were involved in implementing the project.

> *"This was a project that started several years ago with a small hub of four of us committed to finding new meaning in teaching. With each successive step, we had to almost create our plans and ideas anew because of the many changes required by the state, the staff, the district, or the resources available to us. For example, our equipment didn't arrive until months after it was scheduled. Then there was the flu epidemic and a lot of teachers were out sick; the district told us we couldn't pull teachers out any more for training. And so on. Planning required a lot of patience, more than anything else."*

The project directors were asked to indicate the emphasis given to major educational and program priorities during January 1990 - June 1991. Figure 1 shows the rating assigned to the different priorities by Project TIME.

Figure 1: Project Priorities



B. Modifications to Original Proposal Plan

Major changes were made in the project objectives, activities, purchases, and budget from what was originally proposed. The objective of training the entire staff was not met due to a lack of substitute teachers. The implementation of the project was delayed because of problems with the purchasing process. Purchases of hardware and software were changed in order to stay current. Also, the donation of IBM equipment necessitated the purchase of additional software. The budget was changed to include more travel expenses as more meetings were required than expected. The services of a project evaluator, which had been funded through in-kind support were lost due to district budget cuts.

> *"In the early days, we learned by the seat of our pants. Very important, but what often happens is that the initial planning doesn't always work out. Success, in part, depends on circumstances that come up and how you deal with them, which frequently requires modifications to the original plan."*

III. Content

A. Areas of Focus

History-social science was the major curriculum area addressed by Project TIME. English-language arts, mathematics, science, foreign languages, visual and performing arts, and migrant education were included as secondary areas of emphasis. The major school-wide areas of emphasis were general technology use, integration of technology into the curriculum, and professional development. School restructuring and climate improvement received secondary emphasis. Critical thinking, cooperative learning, and interest/attitude were the major areas of focus for student process skills with secondary emphasis placed on study skills and self-esteem.

B. Technology Applications

The major types of technology hardware used in the project were computers, laserdisc players, instructional television (ITV), cable television, LCD overhead projection panels, CD-ROM drives and networking of computers. Also utilized were audio/video production equipment and telecommunications.

> *"The technologies we use are a real potpourri. We have Macs, Apples, laser players, scanners, you name it. If we think it will be an asset to what we're doing in the classroom, we make every effort to get it."*

Six Macintosh SE-30 computers and one Pioneer CD-ROM player were purchased by the project since January 1990.

The major types of software used were word processing/desktop publishing, computer assisted instruction, HyperCard, graphics programs, electronic reference, and business programs. Telecommunications software was also used, but to a lesser extent.

The project directors were asked to list the five most widely used software, video, laserdisc, and/or CD-ROM titles and rate the effectiveness of each title in supporting the project's objectives. It was suggested that the project director ask for the opinions of the staff members who most frequently used the products before determining the effectiveness ratings. The two most widely used computer

programs were *Microsoft Word 4.0* and *HyperCard*. The most popular CD-ROM title was *Educorp 4.0*. Two laserdisc titles were listed: *National Gallery of Art* by Pioneer and *GTV*, by National Geographic. All titles received the highest rating on the scale of effectiveness, which ranged from one to five with five being most effective.

IV. Project Implementation

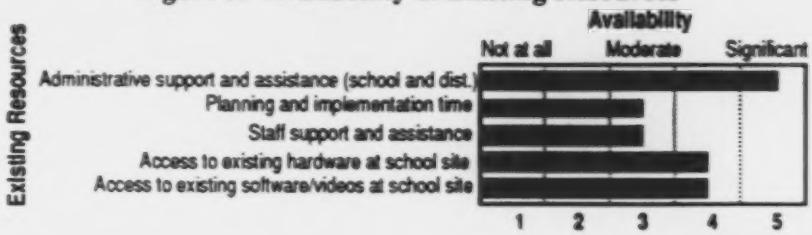
A. Implementation Schedule

Project TIME was scheduled to begin activities funded by AB 1470 in January 1990, but the project staff decided to continue activities previously begun under the AB 803 funding before receiving the new money. In general, project activities were delayed somewhat by delays in the purchasing process and the uncertainty of funding from the state.

B. Project Management and Implementation Resources

The project director, a classroom teacher (history and art), was primarily responsible for project management at the school site. The major sources of individual assistance for project implementation were fellow staff members, county office staff, and the California Technology Project. These sources of assistance were available whenever needed. The project directors were asked to rate the availability of various resources which were in existence before the start of the project. Figure 2, below, shows these ratings for Project TIME.

Figure 2: Availability of Existing Resources



Project TIME was carefully coordinated with Migrant Education and the CTP's training programs. Project TIME took over the teacher training components of these programs at the project site.

C. Staff Development and Technical Assistance

The county office of education, the CTP, technology vendors, fellow teachers, and students served as the major sources of technical assistance to the project. This assistance was used to install and maintain equipment, select appropriate software, integrate technology with the curriculum, locate resources, provide problem solving/trouble shooting services, and assist in evaluating the project.

> *"We started our staff development by using outside assistance and hiring people to make presentations. It was too costly and not that much help. It was much better when we started doing the work in-house."*

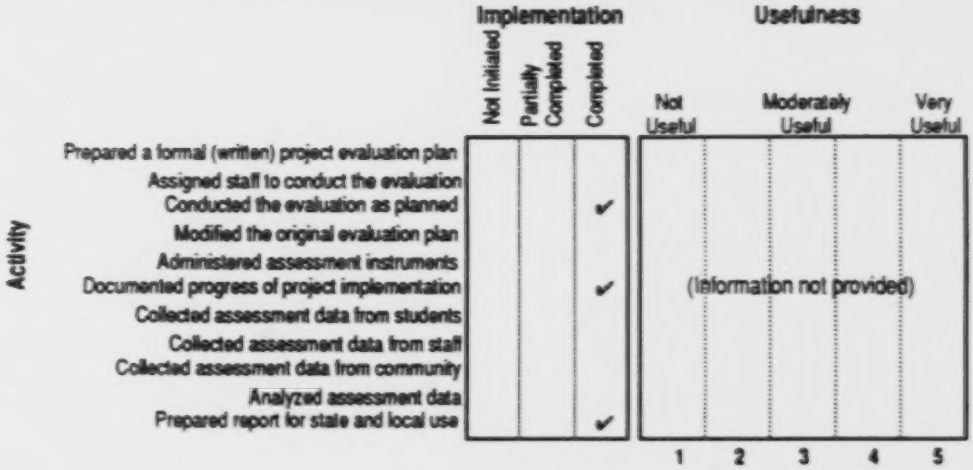
Project TIME conducted a total of 33 workshops between January 1990 and June 1991. Fifteen (45%) of these workshops provided support to AB 1470 School-Based Grants. Services provided included technology use planning, project awareness presentations, reviews of individual grants, and advice to project adopters. Most of the AB 1470 support workshops were one to two days in length. Two in-

depth summer technology institutes were held at SBHS. Eighteen educators were trained each day during these five day institutes. Awareness presentations were given at a variety of conferences including Association of California School Administrators (ACSA), the Educational Technology Leadership Conference, Computer Using Educators (Fall and Spring), and PTA. Six workshops were co-sponsored by the CTP and ten were co-sponsored by county offices of education. In addition to the formal trainings, several schools sent teams of two to four persons for private training sessions. Dozens of small group instructions covering specific pieces of hardware and software were held for groups of two to three educators. There were also hundreds of individual contacts and extensive help was provided by telephone to schools wanting to learn about grants and technology in general. At least 1500 educators were trained by Project TIME between January 1990 and June 1991.

D. Evaluation Procedures

Projects were asked to state the level of implementation and rate the usefulness of a series of evaluation activities. Figure 3, below, depicts this information for Project TIME.

Figure 3: Implementation of Evaluation Activities



The project evaluation plan included on-going assessment activities (formative evaluation) that were implemented as stated in the proposal. The project director was primarily responsible for the evaluation.

There were a variety of problems that interfered with the evaluation of the project. The formal external evaluation was to be part of the district's in-kind payment to the project. However, the district evaluator's position was lost due to district budget cuts. Other problems were that no standards for evaluation were set by the state and no feedback was given after the interim evaluation reports were turned in.

> *"As the project director, I had so many things to attend to this year, including numerous presentations for other schools which took me away from campus. After losing our district evaluator, that meant this responsibility fell to me. It was one more thing to be done in a very long list."*

The quantitative data included logs of computer use and multiple data sources specific to the different adopters. Formal evaluations were conducted of the project adoption workshops, technology use

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planning workshops and AB 1470 proposal writing workshops. Participant surveys with a mix of open and close-ended items were used to evaluate these services.

E. Extent of Implementation

The original project activities, as outlined in the proposal, were implemented as planned. Among the activities were: AB 1470 grant writing, technology awareness sessions, teacher training, experimentation with new software, helping other agencies with technology presentations, trouble shooting activities, presenting at state conferences, AB 1470 project assistance, site visitations and telephone help line. All of the activities will be repeated in 1990-91, Project TIME also implemented some activities that were not planned. These activities included summer training institutes, IBM grant workshops and setting up a technology training complex with CTP, County and Industry.

F. Staff Activity

The project director had three hours of released time and was responsible for all of the staff activities . The project director worked on the project seven days a week, year round for about six hours a day and conducted the following activities : overall planning and management, state and local project meetings, preparing and disseminating materials, conducting awareness activities, completing reports and surveys, providing assistance and training to adopters, district/school activities not directly related to the project, AB 1470 project support, reviewing new materials, helping CTP, and getting additional training in new technologies. Figure 4 shows the estimated level of staff effort dedicated to each of the project's activities which supported AB 1470 School-Based Grant projects.

Figure 4: AB 1470 Support Activities

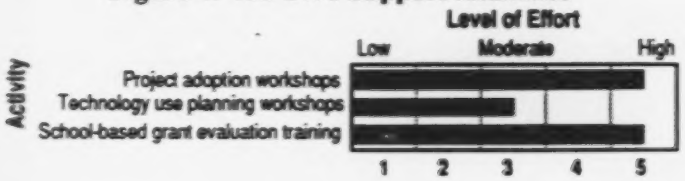


Table 1 shows the estimated number of publications produced by Project TIME.

Table 1: Project Publications

Publications Produced or Distributed by Project	Number of Publications	Number of Copies Printed
Announcements, Brochures, Flyers	3	750
Grant Proposal Models	3	50
Evaluation Models	1	50

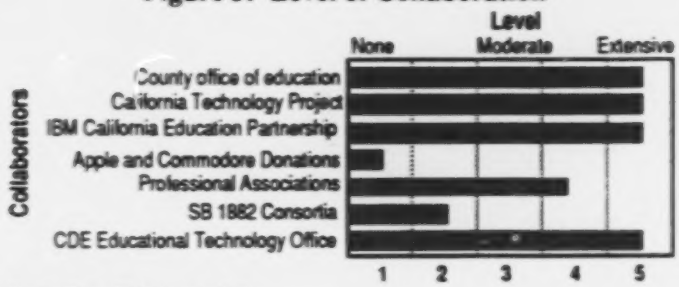
G. Collaboration with Other Agencies

Project TIME collaborated with a variety of other projects and agencies. The county office of education offered technology presentations, technology training and helped with complex grant writing. The CTP helped in the planning of technology institutes, grant writing workshops and awareness sessions. The IBM California Education Partnership was helpful by providing over 35 contacts, setting up a development center, and helping with the training. There was collaboration with professional associations, such as CUE, which included presenting at conferences, and setting up booths. Apple Computer and Commodore Computer presented at the Education-Industry council and offered Amiga lesson plans. The SB 1882 staff development consortia and the CDE Educational Technology Unit gave a presentation to the department of education Technology Division that was especially helpful.

> *"We worked extensively with CTP, probably more than with any others. We put on a summer institute with them, did trainings for grant writing for the school based grant projects with them, and worked on a lot of cooperative projects together. We are trying to coordinate having the CTP, county, and state work collaboratively on a regional training center with us and several others."*

Figure 5, below, shows the project director's ratings of the level of collaboration with each agency.

Figure 5: Level of Collaboration



H. IBM California Education Partnership

The Santa Barbara Social Studies project will use the equipment, software and training from the partnership to equip the teacher training complex and to be used by "at-risk" students. The Project TIME plan is to design interactive multimedia lessons. The project director has taken lessons from adult education on how to operate the IBM computer and has had a one-day training session in Linkway and one day of LAN awareness training. At the time the survey was completed, the IBM machines had just arrived. The plan was to install the network in June and IBM had provided the director with a tutor.

> *"We're pretty optimistic about the regional training center where both Apple and IBM will be major partners to supply equipment and training. IBM has already donated a full lab and much software to us; we altered our AMTEC plan to achieve this."*

Benefits from the project include the convenience of being able to demonstrate more than one platform, and the ability to use new equipment with groups left out of the original project.

V. Project Dissemination

A. Marketing Efforts

The Santa Barbara Social Studies Project began dissemination activities almost immediately. Figure 6 shows the level of impact for several activities as rated by the project director.

Figure 6: Impact of Various Marketing Methods

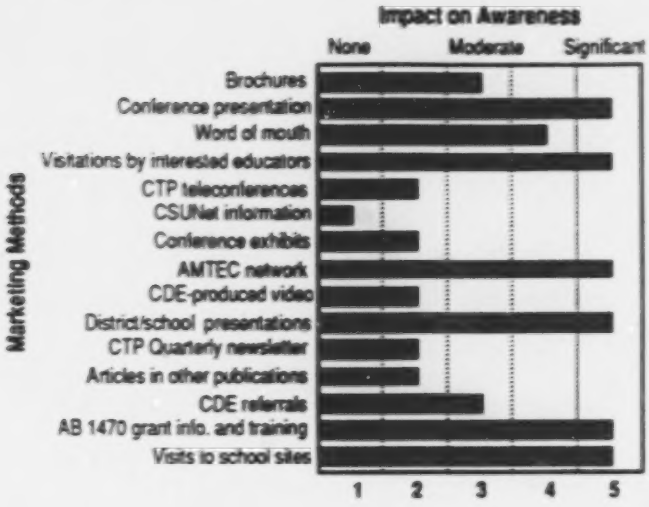


Table 2 shows the number and cost of products produced for the dissemination and adoption of Project TIME between January 1990 and June 1991.

Table 2: Dissemination Products

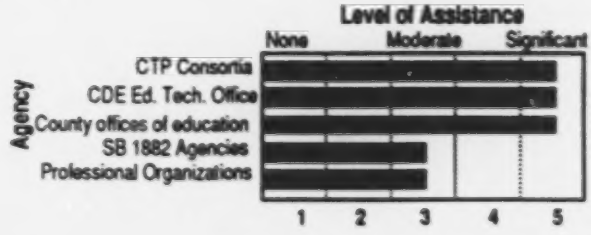
Products	Quantity Produced	Cost
Project specific brochures	NA	$150
Contribution to AMTEC brochures	500	$400
In-depth information portfolio	NA	$75
Training guides	NA	$1,000
Supplemental training materials	NA	$500

In addition to the development and distribution of publications the project conducted a variety of dissemination activities. In addition to the workshops listed before, they conducted one teleconference and the director had hundreds of individual contacts.

> *"A lot of schools lack vision until we have a chance to share with them. For example, they think about using technology 'to put my coursework on,' which is a very limited view of what can actually be achieved."*

The projects were asked to rate the support systems that actively helped disseminate information and training. Figure 7, shows the assistance provided by a variety of these services to Project TIME.

Figure 7: Dissemination Support Services



B. Dissemination Evaluation

Santa Barbara did not conduct a formal or qualitative assessment of the impact of dissemination activities. Many of their activities were in conjunction with other agencies who did do some evaluations.

C. Adoption/Adaptation

The minimum criteria that must be met for a project to be considered an adoption of Project TIME are:

1. The site must adopt the chosen framework
2. They should visit the Project TIME site
3. They should have Project TIME visit their site
4. They should integrate technology into their curriculum
5. They should have Project TIME assist them in training

The specific elements of Project TIME that were adopted most often were:

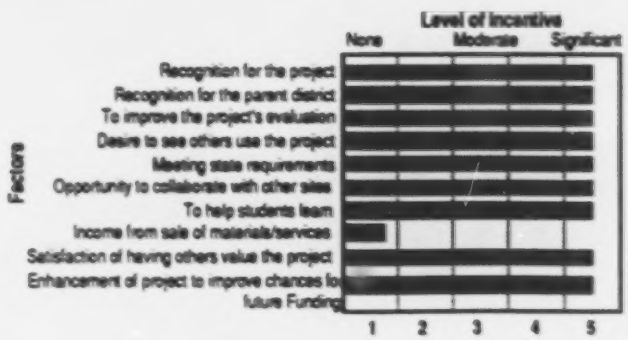
1. Computer technology
2. Laserdisc technology

The project does not establish formal agreements with adoption sites regarding the implementation of the minimum criteria or use of specific services. However, a variety of activities were performed to evaluate the extent of adoption at the various sites. Project TIME helped AB 1470 adopters design an evaluation plan, conducted follow-up visits or on-site evaluation of the level of adoption of the project, conducted follow-up telephone evaluation and monitoring of potential adoption sites. They plan in the future to ask sites for written documentation of evidence of adoption and to conduct surveys to determine the extent of adoption

In all only six sites listed themselves as "adopters" of Project TIME. Of those schools, one was a math project that had some social science added in, the authors of two projects left and were replace by non-adopting activities and the others had well defined programs that provided little or no funding for Project TIME participation. Therefore the director turned his attention to helping the CTP and county bring other schools into technology use.

The project director was asked to indicate the degree to which several factors served as incentives for them to encourage other districts/schools to adopt or adapt the project. Figure 8, below, shows the ratings supplied by the director of Project TIME.

Figure 8: Incentives to Disseminate Project



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VI. Project Support Resources

A. Services

The Santa Barbara school district provided a staff person to assist Project TIME only on an on-call basis. This person was not very helpful in planning and implementing the project. Assistance was found, however, through other services. The director listed the following as being invaluable: staff members, AMTEC members, the CDE, other CTP members, and Apple computer. The director also noted the technology support from various companies as being helpful.

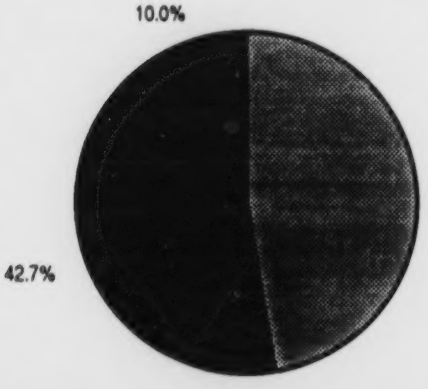
VII. Funding Support

A. Funding Sources

Project TIME received a grant of $85,114 from the state AB 14770 funds. Because they had funding and many schools did not, the director more often than not charged nothing or allowed other agencies to keep workshop fees in order to support their programs. The fiscal agent donated about $18,000. Business contributions were also helpful. Businesses donated about $77,000 worth of equipment, including the IBM equipment donation. In 1991-92 the project plans on taking a more aggressive posture in recruiting schools and charging fees. The director is adding another half- time person to assist in giving workshops.

> *"Through this entire project, dollars have always been an uncertainty. We were never sure if we would have enough money to get us through the year."*

Figure 9: Revenue Sources



Source	Amount
State AB 1470 funds	$85,114
Business Contributions	$77,000
In-kind support	$18,000
Total	$180,114

The in-kind support was received from a variety of sources. The county office of education did much of the organization for subject matter institutes. The Santa Barbara school district kept records, moved equipment, printed, provided office supplies, processed orders, requisitions and travel vouchers. The district also repaired some of the equipment. Other Level II MTS projects paid for booths and helped apply for some brochures. CTP helped plan many of the training sessions. Cal Poly helped with presentations and the summer institutes. IBM partnership provided some training and technical advices, as did Apple. Due to the nature of the services, the director was unable to put a dollar amount value to them. In 1991-92 he anticipates even further assistance from business and industry.

> *"Our district provides virtually no dollars for this project. However, they have been very willing for me to go ahead, for us to try just about anything. They've been supportive of my days off, the letters I've asked them to write, etc."*

B. Project Expenditures

Project TIME did not include the figures concerning their project expenditures. It was noted that in 1991-92 they planned to increase costs associated with a more aggressive policy of getting schools and teachers to participate and then stay on track. They plan on doing this by providing a full-time project director, more travel allowance to visit schools and take part in more of the road show, having more mailings, more upgrading of software and more money spent on summer training institutes.

VIII. Supporting and Impeding Factors

A. Facilitating Factors The level of state AB 1470 funding was a major facilitating factor. It was adequate. The CTP also assisted by collaborating in all activities as the local consortia levels. The county office of education also greatly facilitated the project by being helpful, and by providing administrative time. Business and industry also helped to some degree.

B. Impeding Factors The project director found that many factors impeded the implementation of Project TIME. The method of allocating Supplemental Grant funding caused problems with adopters. Project TIME helped many schools plan for writing grants only to find them frightened away from applying or refusing to take funds because of the fear of losing supplemental funding. The lack of a geographically defined area to serve caused travel costs to be too expensive. The director is also a teacher and could not afford that much time expenditure. The CDE caused problems because their guidelines and expectations change so often. There is a lack of communication. The technology manufactures impeded service due to long delays, mistakes, unfulfilled promises and long delays in repairs.

> *"One of the biggest losses was the cutting of the TEC Centers. They were very helpful to us, especially in training our staff."*

IX. Project Outcomes

A. Student Outcomes

Finding from the Self-Assessment Inventory: The Project TIME activities under AB 1470 were to help other schools set up technology as a part of their framework. Although there was no hard data collected, staff perceived that important benefits were attained and were worth the effort.

> *"Technology helps me learn a lot," commented a student. "I think it makes a big difference in education. I can do so many more things than I could before."*

> *"We have a dramatic increase in our Hispanic population this year. Technology has allowed us a lot of flexibility in meeting their needs. Chalk and boards are 18th century tools. You can't use them in the 20th century with 20th century problems."*

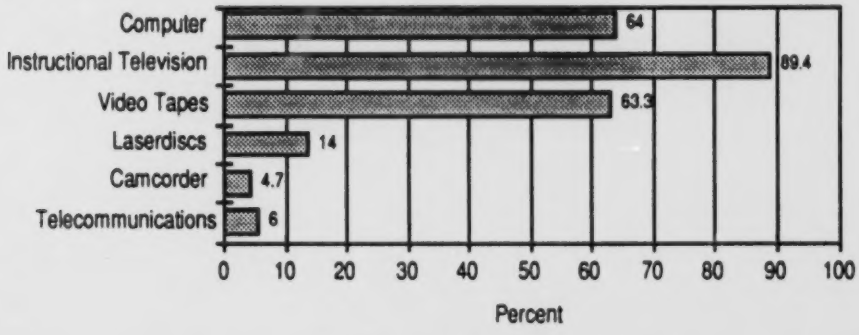
Findings from the Student Survey: One hundred fifty-four surveys were returned from Santa Barbara High School, representing eight percent of the 1,935 students directly served by the project. A third of the students were in ninth grade, 28 percent in tenth, 40 percent in eleventh, and five percent in twelfth.

Technology Use: Instructional television was used to a much greater extent than computers. Almost two-thirds of the students stated that they watched ITV programs on a daily basis. Laserdisc players, camcorders, and telecommunications were used by a smaller percentage of students.

Forty percent of the students use the school's computer lab. A few stated they use computers at lunch (10%), in the library (8%), and after school (33%). Forty-two percent of the students have computers at home. Two thirds of the students stated they use computers to do reports and assignments and 58 percent use them to play games. Migrant Education students were encouraged to play games so that they would learn how to use the computers.

Even though history-social science is the target subject of the project, technology is used in all areas at the school. Computers were used by students in math (52%), social studies (39%), English (31%), and science (8%).

Figure 10: Percent of Students Using Technology at Least Once per Week



Impact of Technology: Two-thirds of the students stated their writing abilities had been significantly improved and half of the students felt computers had significantly improved their abilities in studying and problem solving.

Most of the students believed their grades had improved as a result of using technology. Only 16 percent stated their grades had not been improved. English grades were stated to be improved the most, followed by social studies, math, and science. With the exception of science, most of the students also enjoyed these classes more after the introduction of technology.

Attitude and interest in school was also found to be improved by many students (69%).

Student Comments: Students were asked to describe how the increased use of technology at their schools had made a difference for them. Many comments showed increased motivation and desire to come to school.

One student stated: "I go to my classes a little more," and another wrote: "I enjoy school more and am on time to class." Several students appreciated the introduction of technology because it made the school more like the rest of the world.

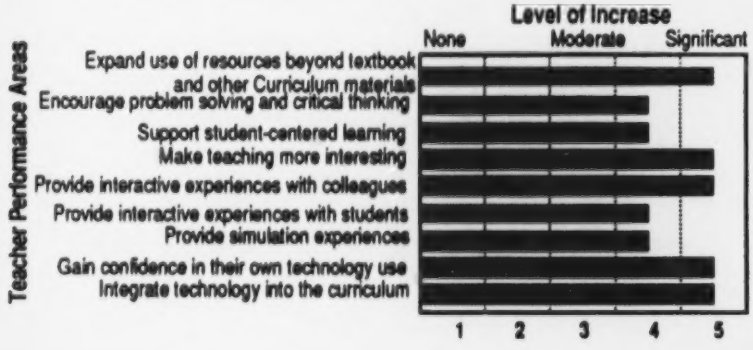
One student stated: "It makes me aware of life today." Another common response was that with computers, "things can be done faster and easier." Many mentioned writing as an area that had been improved.

One response (which was almost illegible) stated: "I have terrible handwriting. It helps my grades to type reports." There were a few negative comments at this site, including some from students who felt that access to technology was inequitable. For example, one 9th grader wrote: "Well, we don't have much, and the stuff we do have is not very well distributed between classes. I wish we had more technology, such as computers."

B. Staff Outcomes

Project TIME met most of its staff development objectives. The projects were asked to rate observed degree of change in teachers as a result of the staff development activities. Figure 11 shows the extent to which the project staff reported improved teacher performance in a variety of areas.

Figure 11: Effects of Project on Teachers



Teachers showed interest in laserdiscs, CDs and video. They formed cooperative learning groups and relied less on traditional lecture format. Many teachers are getting their own computers and all departments in the school are using technology. Staff usage of technology has increased significantly because of the project and many teachers are asking for training. Important benefits for teachers, which probably would not have occurred without the project, were attained and justified the effort in staff development .

"Using technology with my curriculum has really given me a jolt of enthusiasm for my teaching," stated one of the world history teachers. "It's made me 'perk up' quite a bit from what I'd been doing."

"When I paint," said the art teacher, "I never forget to eat lunch. When I sit at the computer, I forget to eat."

C. Program Outcomes

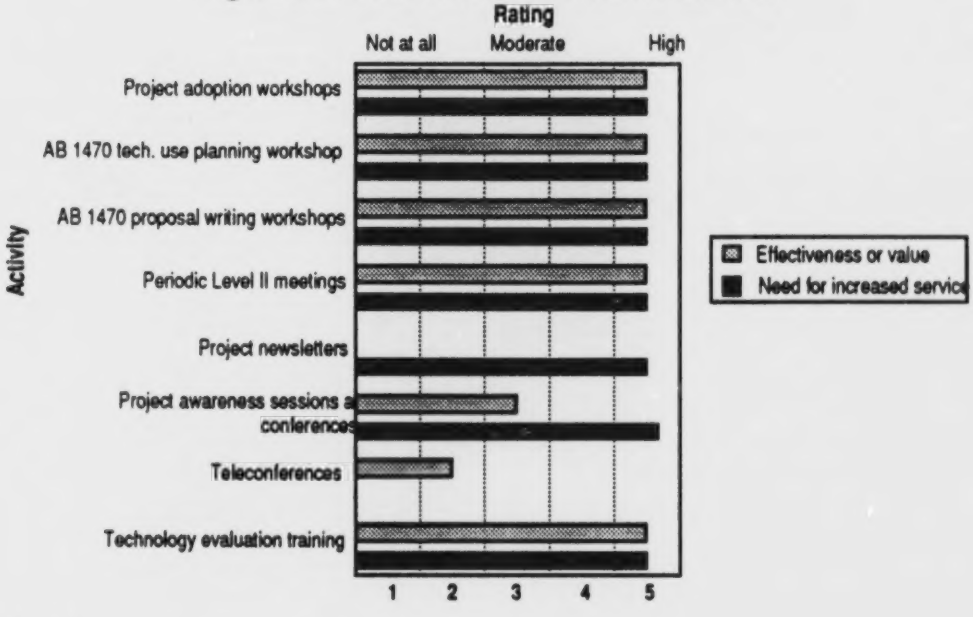
Project TIME stimulated a significant increase in staff familiarity with and use of the state curriculum frameworks. Aspects of the project were incorporated into the School Improvement Plan. Other technology uses have occurred because of the Level II project, as detailed above in the staff outcomes. The project has impacted the school program by inspiration and example. Project TIME is there for support when needs arise, which is encouraging for people just beginning. They also loan out equipment to allow teachers the chance to try out new technologies.

> *"We desperately need a district office plan for technology," commented one of the teachers in the department. "Right now there's no one there to spearhead the effort and provide direction. There's so much we can do, but we need to plan ahead so everything isn't 'helter skelter.' I feel like we're ten years behind times now and we'll never catch up."*

D. Impact of Services

The project directors were asked rate the perceived effectiveness or value to participants of each service offered by the project. Figure 12 shows the results from Project TIME.

Figure 12: Effectiveness and Need for Services



E. Cost Benefits

Given the original objectives and expectations of Level II MTS project dissemination, the project director believes that the funding level for the project has been adequate. However, the program expanded and it would have been impossible for the project to accomplish what it has achieved without the existence of in-kind contributions. If AB 1470 funding were terminated, some schools would be left out and Project TIME would have to resort to helping only those who could pay for their substitutes and time. The director feels the Level II MTS dissemination model is a cost-effective approach to providing

information and training but could be better. His recommendations for improvement can be found in the recommendations at the end of this report.

F. Unanticipated Outcomes

Among the unanticipated findings encountered by project were:

> *"There has been a lot of carry-over to other departments in our school. It's interesting how you start with something new in one place, then turn around and it's spreading to other places. It's like you can't hold on to it, which is part of the magic."*

1. Some teachers were more receptive to technology than others
2. Few social studies programs wrote grants or requested help
3. Few adopting schools put any money in for Project TIME after they received their grants.
4. Many of the recipient schools were confused because of their lack of guidance.

X. Recommendations

The director of Project TIME offered the following suggestions to improve the Level II MTS dissemination model.

1. Project directors should be trained in needed evaluation skills and should be able to help with that phase
2. Project staff should visit all AB 1470 schools in their areas in order to keep them on task.
3. Help all the Level I II and Level II MTS Projects to be demonstration and training sites to help the CTP
4. Let the Level I II and Level II MTS Projects cooperate in offering technology institutes at both awareness and advanced levels.

> *"I teach two periods of ceramics here at the high school," commented the director. "It's almost impossible to hire substitutes that can take over this class, which makes it really hard to get out and work with other schools who need my assistance and expertise. There really needs to be enough money for the project director to do this full time so that schools can maximize the value of technology."*

5. Directors should all take on the awareness training of as many school boards and administration centers as possible.
6. Emphasis needs to be taken away from working only for the AB 1470 schools and back to working for the state and all the schools.

The director also offered the following recommendations for the project in general:

1. At least one person in each project should be full-time. Every school and teacher should be eligible for help. The projects should be agents of change and present to as many schools as possible.
2. Apple and IBM should have given more support, given that sites are demonstrating their products. The state might use its influence to suggest more loans and donations.
3. There needs to be more consistency in planning. Everything is in constant flux and if this is going to continue to be the order of the day, more warning needs to be given.
4. The state needs to act as more of a broker in the collaboration with other agencies, should be consistent in all projects and at all sites.
5. AB 1470 funding should be for longer periods of time. The same money should be given to each project, but they should be given longer to get equipment and train their staffs. Give the projects more time to help the sites.
6. State support is absolutely necessary for the continuation of the program. It should be long term to take advantage of the training and expertise. It should be built into future grant legislation.
7. The state should be a facilitator in insuring the collaboration of AB 1470 with other state programs.
8. The state expectations for Level II MTS Projects changed too often. Should be more consistent.
9. A study should be done of history-social science teachers that includes: personality types, attitudes towards change and technology, autocratic classroom attitudes, their thoughts on lecture as a method of instruction, student leadership, education in general and educational leadership in particular. This would shed light as to why they were so unresponsive to this project.

School Site Visitation Findings

I. Background Information

Site visits were conducted to find observable evidence to corroborate the findings from the surveys, self-assessments, and interviews. Visits were focused on those schools that adopted Level II MTS Projects to help determine the influence and benefit of these models on facilitating implementation of School-Based Educational Technology Projects. The visits generally observable evidence that the projects were having the effects suggested from the other data sources from both the School-Based Grant recipients and the reports of the Level II MTS Directors. For more information on Level II MTS Projects mentioned in this section see Phase II, Volume III of this study.

About the Visits: During May and June, 1991, eleven schools that had been awarded Phase I MTS school-based grants were visited by the CETAP project consultant. One full day was spent at each school, interviewing the project coordinator, teachers, students, the site administrator(s), and others as deemed appropriate and important for each site (e.g., parents, district administrator, aides, etc.). Identified classrooms and/or labs were observed where technology was being used that demonstrated the objectives of the project well.

About the Schools: Schools were selected for site visits based on recommendations from Level II MTS project directors. In each instance, the schools were thought to be faithful adopters of the Level II MTS project. This was determined by several characteristics, including visitations to the Level II project, workshops requested by the school from Level II MTS project staff, and phone interviews by the CETAP project consultant prior to the visit. Below is a listing of each of the schools, categorized according to the Level II MTS school project it adopted.

PROJECT LINKS: LANGUAGE ARTS

Landau Elementary School: Located in Palm Desert, this K-5 school serves 858 students. The project's focus is integration of technology into the language arts curriculum with an emphasis on writing. A networked lab has been set up in a classroom with 26 computers. Teachers bring students into the lab once a week for at least forty minutes, according to a preassigned schedule. The assistant principal oversees the lab and an aide is assigned to work with teachers during their time in the lab.

Roy Cloud Elementary School: Located in Redwood City, this K-6 school serves 392 students. The project's focus is integration of technology into the language arts curriculum with an emphasis on writing. A lab has been set up in a classroom space and students are brought into the lab by their teacher. Parent volunteers assist in the lab; teachers are responsible for instruction while their students are in the lab.

PROJECT FUTURE: LANGUAGE ARTS

Orchard Elementary School: Located in San Jose, this K-6 school serves 392 students. The project's focus is the integration of technology into the language arts curriculum with emphasis on writing, reading, listening, and speaking. A lab has been set up in the library, along with a media supply area so teachers may use equipment in their classrooms. A media director is responsible for assisting teachers with resources in their classrooms. Teachers are responsible for student instruction while using the computer lab.

Ball Junior High School: Located in Anaheim, this 7-8 school serves 923 students. The project's focus is the integration of technology into the language arts curriculum with an emphasis on writing. A Mac

lab has been set up in a classroom space, and English teachers take their students into the lab according to times signed up for on a weekly chart.

PROJECT HAT: HISTORY-SOCIAL SCIENCE

Bayside Middle School: Located in San Mateo, this 6-8 school serves 634 students . The project's focus is the integration of technology into the social studies and language arts curricula with an emphasis on the social sciences. A media center has been set up next to the Macintosh Lab (established at an earlier time with other monies) and library. Social science teachers have access to all three on an as-desired basis.

PROJECT TIME: HISTORY-SOCIAL SCIENCE

Oak Park High School: Located in Agoura, this 9-12 school serves 280 students. The project's focus is the integration of technology into the social science (geography) curriculum, with an emphasis on writing. A computer lab has been set up next to the library and ninth grade geography students and tenth grade English students rotate into the lab on alternating days, two days each (no students are assigned to the lab on Fridays). The project director is assigned to the lab full-time. Teachers send half their students to the lab to work with the director; the other half remain with the teacher for smaller class size instruction.

PROJECT TOPS: SCIENCE

Montevideo Elementary School: Located in San Ramon, this K-6 school serves 533 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. Materials are housed in the library and/or classrooms, and are accessible to all teachers in the school. Teachers use technology in their classrooms to enhance and augment their science lessons.

Buri-Buri Elementary School: Located in South San Francisco, this K-6 school serves 583 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. Materials are housed in a classroom space and are accessible to all teachers in the school. Teachers use technology in their classrooms to enhance and augment their science lessons.

PROJECT TASC II: SCIENCE

Pioneer Middle School: Located in Upland, this 7-8 school serves 860 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. One science teacher volunteered to be the "pilot" teacher during the 1990-91 school year and used the equipment in his classroom with his regularly assigned science students.

Gage Middle School: Located in Riverside, this 7-8 school serves 1,154 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. Equipment and materials are accessible from a lab and teachers either take students to the lab or resources to their classroom.

OTHER: LANGUAGE ARTS

Sequoia High School: Located in Redwood City, this 9-12 school serves 1,600 students. The project's focus is the integration of technology into the senior English classes with an emphasis on writing. A

Macintosh "Communication Lab" has been set up in a classroom space near the English Department, and teachers may take students into the lab as desired and signed up for.

Synopsis: The predominant curricular focus of the site-visit-projects was language arts with emphasis on writing. Most of the site-visit projects determined that a lab setting was the most effective and efficient means of integrating technology; in most lab settings, the teachers either bring or send their students for instruction. Most of the labs are arranged around computers and computer applications.

Following is a summary of the findings across the sites visited with selected quotes from teachers interviewed at the sites.

II: Planning

In all instances, site-visit projects had either visited one or more Level II MTS project sites or had been in-serviced by the Level II MTS project staff. In many instances, both activities had occurred.

> *"We did a summer institute and went to the Level II school for two days. Everyone went, on different days so the entire school wasn't vacated all at once. On the day I went, everyone was very excited about the program, even those that were technologically resistant."*
>
> *"I was one of eight or nine people on the team; we wrote the grant by meeting at the principal's house on weekends and hammering it out. We knew that we had language arts as a target, so the decisions regarding what to do were simple. Several of the teachers and the principal visited many schools to look at as models. We used their model."*

Site-visit projects directors indicated these initial visits prompted their planning for project development and had they not had the experience, they might not have been as attentive to the need for planning. They particularly stressed the importance of having been guided by Level II MTS staff to include *lots* of staff development opportunities.

> *"Training is critical. We have to allow for it. We need more than a few in-services. We need a lot. We need to build in the training."*

Site-visit projects schools that established a committee structure for planning, found it to be valuable for project implementation, although the few schools that did not use a committee reported they were able to implement their project without any major problems (other than those 'normally' encountered by introducing a new project into a school).

In many instances, project planning was included as part of the school's SIP activities. In one school, the project was completely absorbed, even to the co-mingling of funds.

> *"Most of our planning is done through our SIP committee. In fact, our grant monies went directly into the SIP budget, which makes it very hard for me to do the bookkeeping."*

All site-visit project directors indicated they had a formal plan to follow during implementation, and acknowledged that the planning required to apply for the grant was very beneficial. Most made modifications, however, to their original plans, generally because of time factors. Frequently delivery schedules were delayed, or staff expressed a need for additional staff development to ready for implementation.

III. Content

The majority of the site-visit projects chose to integrate technology into the language arts curriculum to specifically improve communication skills, particularly writing. Even in schools where other content areas were emphasized, improving students' writing skills was a strong focus. Because most projects had used funding to establish a computer lab, this was not an unusual finding. In one school, writing had become the primary focus for development even though stated project objectives did not include writing as a goal or activity.

A wide diversity of other technology was also used by site-visit projects. Other than computers, the following technologies were frequently used: laser disk players, LCDs, VCRs, camcorders, cameras, and GTV. This was particularly seen in sites where Level II MTS science projects had been adopted. Project directors attributed the wide range of equipment and resources to the two models they had observed.

> *"We had an in-servicing from the Level II project right after we found out we were being funded. When we saw all the equipment and all the possibilities, we knew we wanted it! Our teachers were sold with this first in-service."*

IV: Project Implementation

Most site-visit projects were unable to begin their project activities as originally scheduled, primarily due to time constraints. In some instances, equipment did not arrive on time; in others, retrofitting of the classroom(s) was delayed. Several other reasons were mentioned as well.

> *"We seemed to have nothing but troubles. The carpenter making our furniture died and we had to find a new one. Then we had problems with the electrical in the lab classroom that had to be fixed. And to top it all off, the company was slow delivering our order. In fact, they changed our order and we had to get it all straightened out."*

At almost all project sites, a classroom teacher was responsible for implementation of the project, at the same time being required to teach either a full or part-time schedule of classes. In two schools, administrators were responsible for the projects, and in one school an outside consultant (a former media specialist at the school) was responsible.

The schools that modeled their learning resource management after the Level II science projects had more to deal with in terms of logistical flow and scheduling as they arranged to take equipment out to the various classrooms for teachers' use.

> *"I see myself as a facilitator of materials," indicated one of the teachers. "I have to know where they are and how to get the best resources out for the job to be done. If the teachers don't use it, how are the students going to get it? Do you want them to be the fence or the road. If the program stays in the file cabinet, no one will get the benefit."*

Unlike projects where learning resources were housed in a lab setting, these directors had to be particularly efficient in making sure that requested equipment arrived as scheduled.

> *"We have such great support from staff here. I know that if I'm not around, the media specialist or the aide will get whatever is needed by teachers out to them. I can't stress how important this is. If equipment becomes a hassle for teachers, the tendency is not to use it. I don't want this to happen."*

Staff development was stressed in every site-visit project school as being one of the most valuable assets of the project.

> *"I really liked that the state required that a certain amount of the grant be devoted to staff development. Of all, this is what the teachers appreciate the most. Just having the time was great for them. And of course, we were out of alignment anyway, so it was perfect for us. It also motivated the district, way out of alignment, to get on track. I would have liked to see more framework alignment using technology.*

Schools implemented varying degrees of staff development, primarily based on the needs of the staff and overall objectives. In some project schools, training was done on a regular basis at faculty meetings. In others it was done during release days. In one instance, time was provided for small groups of teachers to come to the resource lab for individualized training as various programs and/or equipment comes into the school. In some instances, time was provided for teachers to come to preview resources they may decide to order.

> *"It's been great to be able to take time and see what is available and to learn how to use it, see if it will work for us, and feel comfortable about it," commented one of the directors. "When we order something, we know before it arrives that it is what we want. Our Level II school has been great about letting us use some of their things for just this purpose."*

Few of the projects had implemented any evaluation procedures, primarily because their projects had recently been installed. Although all project directors expressed that evaluation was valuable, some were reticent about their abilities to adequately develop the forms necessary to gather the data needed. One project director, however, had no qualms whatsoever about his abilities to evaluate the project, and was, in fact, well into the process.

> *"I made up a student and a teacher survey myself, since we weren't getting any assistance in this. The staff survey is adapted from the Level II model. We also keep a technology use log book, a technology tutor request form, and lab schedules. All of this we have used to evaluate what has been happening. We wanted to capture more qualitative data, but that hasn't happened yet. We've also done evaluations on the workshops. They have been very positive. We've also done informal evaluations of software. We look to see what works for our needs and we know when it's right. It will be interesting to get the final surveys back and compare them with the first ones."*

V. Project Support Resources

Level I and II MTS Projects: All site-visit project schools indicated they had received services and support from Level II MTS projects. Only one school received services from a Level I MTS project. Most site-visit project directors and some teachers had attended at least one CUE conference, and several had attended more, where presentations observed were found valuable.

CTP: Six of the site-visit project directors indicated they had found CTP services to be valuable, specifically the evaluation workshops.

> *"One of the teachers and I went to the CTP when they did the evaluation component. It really gave us a chance to sit back and take a look at what we had done, to reflect. I remember how surprised we were at what we had done. We hadn't really had a chance to do this before, and the most valuable thing was to see how far we've come."*

District Support: In the schools that indicated they had strong district support, project directors attributed much of the project's success to that support.

> *"The district has been very helpful in setting us up. There have been no delays or slowdowns. They've given us lots of in-kind support. They've also covered the cost of phone lines, some of our publication expenses, and a lot of others. It has been extremely helpful and has enabled us to concentrate on our project."*

> *"We have a district person who does staff development. She gives in-services in technology, in programs; she knows it all. She knows which are the best ones. Our district, and our school, has the best resource in her. She makes all the difference in our project. She helped us write the grant too. We've had nothing but positive support from her."*

One project director indicated that much support was received from the language arts department chair, stating:

> *"She softly guided the department forward. She does outstanding things with kids and is committed to the use of technology. She likes our department to be out in front. She was strongly in favor of the grant application and had us bring our computers into her room several times to do writing activities. There were a lot of logistics that needed to be worked out, but we were all willing to go for it."*

VI: Funding Support

Sources: Five site-visit project schools were prior recipients of AB 803 funding, which was reported as one of the main reasons for current interest in technology and its applications to curriculum. Six schools received additional support from SIP funds on an ongoing basis, and four indicated they used lottery funds to augment their AB 1470 monies. Only one school reported they were using Chapter I monies in conjunction with funding from the grant.

One school had a long history of garnering funds for technology projects, starting with AB 803 (which got the first computer lab started), then receiving the English Demonstration Grant (which emphasized staff development, thus setting the stage for AB 1470 objectives), then recently a foundation grant (which will place 15 IBM's on every campus in the district). This school will also be networked to an 'at-risk' program in the local mall.

> *"This past year has really been a big turn-on to technology across our campus."*

Project directors consistently acknowledged the tremendous impact the grant monies have had on what projects have been able to achieve.

> *"There's no way we could have done this without the seed money!" commented one of the teachers. Another added, "Without the grant, we wouldn't have even started. With the seed, things blossom. Without it, nothing grows."*

Anticipated Future Funding: Without exception, directors, teachers, and administrators at all eleven schools indicated they are anticipating additional funding to enhance what has been so successfully started. Most aren't sure where they will get the funding, but are certain that it has to be obtained. All expressed dissatisfaction that the School-Based Grants were funded for only one year.

> *"One year's funding," commented one director, "is just enough to warm up with. You just get underway and then your money is gone." Another director echoed similar sentiments, saying, "We need another year of funding. One year is not enough. The first year is exploration, the second year is growth. You get to really see the additional things you need that first year, then you need to continue so you can really have an impact."*

VII. Supporting and Impeding Factors

Supporting Factors: Numerous supportive factors were mentioned by both project directors and by teachers. Repetitively, they expressed the value of outside help, including the Level II MTS project staff, county and state staff, CTP staff, and district administrative staff. In almost every instance, recognition of the outside support was followed with an expression of need for continued assistance.

Both directors and staff members reported staff development to be a strong supporting factor, and generally they would like to see additional opportunities created to further increase teachers' knowledge and abilities.

> *One project director stated that the opportunity to become an adopter was a tremendous support, "I like the idea of the adoption/adaptation. When I first went to the meetings, I was reluctant. My principal really pushed me to go. When I heard about the social studies part, I was interested because I have an interest in social studies. It was nice to know you could 'adapt' an idea to your own school."*

Impeding Factors: The two greatest impediments to project success that were repeated across all eleven schools were insufficient time and resources. Time was a significant impediment in two areas: the director was generally a teacher and was required to teach a full or reduced load of classes each day; equipment and programs were almost always delayed and late in arrival. Not having someone assigned to the lab to assist teachers was also frequently mentioned as an impediment.

> *"It is a real sore point," commented a teacher. "We have our equipment finally, we have our room, but we don't have a lab person. The district signed off on the grant and it seems their philosophical, moral commitment stopped. We can't send all our teachers out to see what's happening to learn from. We need a resource person. We need someone who can do this for me so I can teach my classes."*

Two school directors indicated that recalcitrant and reluctant teachers were an impediment to a project's success, primarily because of the difficulty and time commitment required for training.

> *"The biggest problem," stated one director, "is the reluctant teacher. With the students it's easy. They're so willing to try new things, to take technology on. The hard part is with the teachers. So many of them are just resistant to trying something new and different."*

Several directors reported that circumstances 'beyond control' were also an impediment, including retrofitting problems, a change in administrators, a change in assignment for project teachers (removing them from participation and assistance), and unfamiliarity with a lab teaching situation.

"One problem is that English teachers are not used to teaching in a lab situation; science teachers are," commented one of the English teachers. "We're used to teaching right to the last minute, and this has certainly created some problems."

VIII: Project Outcomes

Student Outcomes: Student outcomes were reported by project directors, teachers, administrators, and students themselves. In almost every instance, the respondents dealt the outcomes to be highly positive. Positive outcomes were reported primarily in four areas: learning, motivation, attitude, and behavior.

Learning: Project directors and teachers frequently expressed that they had noticed a change in students' learning and/or achievement in classes. For example, several teachers talked about how students' writing had improved, in length, quality and depth:

> *"Students are actively engaged in writing. I can't believe it they're writing a lot more than they used to. . .I haven't seen that students much prefer to write to using the computer. They can't wait to finish one project and start the next. they are so eager. I know, myself, that I prefer it. I'd never go back to writing longhand. Student's work tends to be messy; this way they can clean it up and make it presentable. . . The biggest advantage for students is that they can do their reports easier. They can type easier than using a pencil, it's quicker, and it looks better!. . .I think for students it will be impossible to survive without access to a computer, or better yet, one at home, by the time they reach high school. What I find happening with my students is that they turn most of their work in done on a computer. The students are really striving for quality. Computers allow them to achieve quality. Well over half of the papers I get have been done on computers. Many have graphic covers done on Printshop. A lot a very sophisticated."*

Several teachers also reported that increased learning had occurred with ESL students.

> *"I've had great success with my ESL students. They're interested, and they want to do well. They really do learn the language faster, I think, than when I taught without technology."*

Another told a story about a Vietnamese student who began participating through "Book Talks," a classroom instruction technique where students report to the class on a book they have read while being videotaped. The videotapes are then played back, and students can provide input for improvement.

> *"The first time he reported, he didn't say a thing. Then he got up the second time and said the name of his book, his name, and told us who the author was. By the fourth time, he was really telling us a lot of information about the book. His growth in language was amazing. He's really been interested in using the camera, and loves to get up front of it."*

Another teacher expressed how technology had benefitted resource students:

> *"I think the impact, especially on special students, has been the best. It has really decreased their frustration levels, which allows them to feel good about their progress, which in turn allows them to learn more, faster."*

Students agreed that technology increased their learning abilities:

> *"You really learn a lot. You learn facts much easier. . .It makes our reports so much better. You get to use pictures and other things. It's far more interesting than just going and reading a book. We're not just getting ready for the future, we're learning a lot of stuff, a lot of other stuff, along the way."*

According to one of the principals, increased learning has been the greatest advantage to students implementing the technology in their school.

> *"I've seen a great increase in students' thinking skills as a result of technology being in this school. For example, using CAP writing modes, students have put on hats and adopted the persona of that person, and have talked about that person, then written about it. Also, the Reading Rainbow in Book Talks, some of the students have talked on and on, and these students are ones that normally wouldn't say anything. Also, the critiques that some teachers do, they have been tremendous for thinking skills. Students view their presentations, then critique it, and outline what they can do to improve. Students are excited, turned on, and love to work as a result."*

Motivation: Repeatedly, both teachers and students reported that interest in schoolwork and in school had increased as a result of using technology.

> *"Students' motivation and awareness have increased. They are delighted to be allowed to create with the equipment on their own. They enjoy being in class more, they enjoy being in school more. As we get more training, we can pass more on to our students."*

Attitudes: When a fourth grade class was asked how they reacted to using technology, their response was unanimous: 'It's fun.' Their response sums up the change in student attitude noticed by teachers and administrators across the school sites visited. For the most part, all constituents agreed that because technology had been introduced into the school and was being used on a regular basis, student attitudes had improved towards learning, towards school in general, and towards completing their work. And many expressed how technology was preparing them for the future.

> *"It will help us along with a lot of things. I'll be able to do my bills with it, my budget, etc. Right now I do my homework using it. . . Technology is much easier. It's not boring. It's getting us ready for the future. Our world is using technology; we even have computerized cars."*

Several talked about how roles had shifted as a result of technology use. Students were proud they were able to act as teachers, and teachers, though uncomfortable at first, were pleased to watch students assume leadership roles.

Self -Confidence: Overall, both teachers and students indicated that student self-confidence had increased tremendously as a result of using technology.

> *"It was a real surprise to us to discover that students learned faster than the teachers. They have tremendous self-esteem as a result of the technology. It wasn't part of the grant. It wasn't part of the things we expected to happen. . .It has given students an added degree of expertise, increased self-confidence, and a camaraderie that didn't exist before. . .My parents have had a camcorder at home for a while. My mom wouldn't let me use it. Then I got in the video club at school and my mom said, 'If the school can trust you, then I can.'"*

Comments from students such as "It's been a good experience for me; its given me a lot of self-confidence," or "It has given me an added degree of expertise, increased self-confidence," were no unusual, but instead frequent statements during interviews.

Overall: Most teachers reported the greatest student change observed had to do with writing. Many talked, as above, about the positive impacts they had witnessed: students wrote more, they wrote better and they wrote more neatly. Several teachers also talked about the future impact of technology on the writing process, and on the process of communication in general.

Respondents cited additional student benefits, including the following: increased peer interaction, hightened positive attitude towards school and classroom, added expertise in particular areas increased self-confidence, greater excitement about projects, and camaraderie between teachers and students.

Teacher Outcomes: Numerous teacher outcomes were reported by project directors, teachers themselves, administrators, and students. In practically every instance, the respondents stated the outcomes to be highly positive. Positive outcomes were reported primarily in three areas: motivation, skill development, and collegiality.

Skill Development: Teachers were reported to have dramatically increased their skills, in many areas. Of particular importance was their inclusion of the state frameworks into their curriculum. Many teachers indicated that until they began using technology they had only paid lip-service to the frameworks, recognizing that they existed, but not really using them as part of their lesson planning. As one of the English department chairs nicely summarized:

> *"The advantages in using technology for our teachers have been tremendous from my perspective. Our technology lab has really reinforced the frameworks with our curriculum. Yes we all had sessions where we talked about how we could use the frameworks in our lessons, but this really cemented it for us. The lab has brought us together on the issue, teachers feel connected to it. I go out now, and I see that teachers are really using the frameworks as the guiding principal for what's happening in their classrooms."*

Many indicated the advantages to instruction to be tremendous as well, particularly as technology has allowed teachers to move from an approach where the teacher is in control of information to one where the student has greater responsibility for information acquisition. As one principal commented:

> *"Teachers are learning about something new, they are approaching instruction a bit differently, and they are excited to see their students so excited. Teachers are allowing students to direct many more of their tasks than they have ever done before. They let the students design projects, for example, and determine the resources they will need to consult in order to deliver the finished product. And the teacher is facilitating the students by acting as director, pointing them in directions for exploration."*

Another principal talked about how teachers in her school had been using the video club services, taping lessons so they could be used with students who were absent:

> *"Technology has really added a skill for teachers that they wouldn't have had the access to before; they can now use services in optional ways to aid their students. The video club has been a great asset to the staff in their thinking."*

Motivation: Teachers talked repeatedly about how their interest in teaching had increased as a result of learning various new teaching skills using technology. One frequent word that surfaced as respondents talked about using technology was "fun." Teachers stated that technology had increased the fun in their work. They also reported it had added challenges and tremendous growth in professional competence. Principals talked about teachers wanting to learn everything available, then asking for more beyond that. Teachers talked about how they were "stimulated" about their jobs again, and students talked about how much more "fun" teachers had become. One of the principals stated it best when he said:

> *"All I have to do is walk around the campus and I can see that we've been successful. The teachers are using the equipment and they're using it with the students. They come in to see me regularly to see what they can take on next. They're excited about doing more. They're asking me all the time about buying more and better equipment, so they can do even more."*

Collegiality: One of the greatest assets of the projects lauded at almost every site was the increased communication and collegiality which technology brought to teachers. Again and again, this refrain was iterated, summarized best by one of the teachers:

> *"Technology has forced us to work cooperatively. You've heard about cooperative learning for students? Well, we've had to learn how to work together. We learn from each other. We share a lot. One or two of us will go visit someplace, then come back and share it all with the rest of the staff. We see each of us doing different things with technology, and we train one another. We talk about what we're doing."*

And as another teacher at another site added:

> *"I was so excited when I was here the other day, to hear teachers in other departments than mine talking about technology. They're interested, they're sharing, they're willing to take it on. They eager, in fact, to share their ups and downs as they learn new things. They're willing to help one another and to work together to achieve a particular goal."*

Program Outcomes: Most respondents cited alignment with the curriculum frameworks as the major program achievement as a result of technology use. Since this was one of the grant requirements, they reported it really pushed them to address this issue in a realistic, productive way. They also indicated that integrating technology as a result of the Site-Based Grants had increased their focus on coordination of subject matter areas, technology, and state requirements. As one principal described:

> *"It has brought a focus that enables teachers to carry on an integrated program coupled with technology and the state frameworks. It really brought it all together."*

Several sites talked about the increased interest level for staff, students, and parents as a result of technology. For example, one principal commented:

> *"The greatest impact on our school has been the exposure to newer technologies that we wouldn't have gotten otherwise, such as CD-ROM. It motivated and interested teachers and staff to use technology in other subject areas and curriculum. It wasn't the romance of the hardware or the software; it was the exposure to what it can do in the classroom. It really heightened the interest level, overall, of our staff."*

And a principal at another site talked about how technology has improved the presentations and programs offered to parents, such as back-to-school night.

> *"We had several nights where we set up multi-media presentations. Particularly on our back-to-school night, we were really prepared, setting up laserdisc players, videos, camcorders, etc. We showed parents the equipment, then encouraged them to visit their child's classroom to see what the students were doing with it. We also used a lot of students to demonstrate the use of technology in the classrooms, which was very impressive. Parents were so excited! This has been a real boon to our program in so many ways."*

Summary and Conclusions: MTS Level II Schools

I. Background Information

Objectives: Six schools have been funded for the last four years with the primary purpose being to integrate technology into a single curriculum content area and to produce model products and practices for other schools to adopt or adapt. During the past two years, the six Level II MTS projects were specifically charged to provide dissemination information, staff development and printed materials to AB 1470 School-Based projects, and others, as requested. All six projects evolved from AB 803 grants, and all six attributed the projects' initiation to the opportunity made possible by AB 803.

***Curriculum Integration*:** Two Level II MTS projects (one elementary, one middle) focussed on the integration of technology with the science curriculum; two schools (one elementary, one middle) focussed on language arts curriculum; and two schools (one middle, one high) focussed on the history-social science curriculum. There were no Level II MTS projects focussing on math curriculum, although this will be rectified during the 1991-92 school year with the addition of another school site with technology integration into the math curriculum as its focus.

Demographics: All six Level II MTS projects are located in either urban or suburban areas and serve approximately three to five hundred students (some schools claim to serve additional numbers, and have indeed expanded their program into other content areas or grades, thus increasing their overall numbers). Four of the schools serve predominantly Caucasian (50%+) and Hispanic (35%+) students; one serves Caucasian (43%) and Asian (38%) students; and one serves predominantly Filipino (50%) and Asian (19%)students.

***Directorship*:** Four of the Level II MTS projects have been served by the same project director since the beginning of funding four years ago. One project's director resigned after three years and has been replaced by two co-directors. One project's director died during the fourth year of the project, was replaced immediately with an interim director, and that director was replaced by a new director beginning with the 1991-92 school year. Three of the directors have no classroom responsibilities and their sole assignment is to the project. Three schools have required the director(s) to remain in their classroom assignments either full or part time.

***Setting*:** The six Level II MTS projects use lab settings to a varying degree for the integration of technology with the curriculum. One of the schools, rather than bringing students into the lab for instruction (although that option is available and used by many teachers), has set up equipment and resources onto movable carts for taking directly into teachers' classrooms. At another site, the lab is used only in conjunction with classroom computer activities as the project staff believe that classroom resources should form the foundation for technology use. Another school has set up classroom mini-labs of 10-12 machines each.

***Dissemination Activities*:** Four of the six Level II MTS projects directors have been extremely active in dissemination activities during the 1990-91 school year, while one has been moderately active and one, due to a lack of funding and release time, has had little time for dissemination activities. Three of the projects (two language arts, one science) have had a large number of schools indicate they are adopting or adapting their projects. The other three have had moderate to few indications of adoption/adaptation.

II. Planning

Structure: Four of the six Level II MTS projects used a committee structure for initial and ongoing planning of their projects, two did not. Of the four with formal planning committees, one had a strong interface with their SIP committee during all four project years, one has recently begun interface with their SIP committee, one interfaced with their site council, and one interfaced with their school curriculum committee. In the two schools that did not use a committee, the project directors indicated they did the majority of planning themselves, although staff members frequently had opportunities to express ideas, to provide information, or to suggest changes. Five schools ultimately developed district level and/or site level technology use plans, one is currently developing a district plan.

Modifications: All of the projects indicated that major changes were made in their original plans throughout the course of the four years. However, one felt they had made changes, but that they were not significant ones. All of the project directors felt that changes were required due to a variety of influences, including slow delivery schedules for equipment, changes in requirements from the state, site changes, changes in directors, and others. Regardless of the numerous and vital changes, each felt that the changes were necessary, important, and productive, and that the projects prospered as a result.

III. Content

Technology Applications to Curriculum: All six schools used a variety of technologies in conjunction with content curriculum. The most frequently used equipment included computers (primarily Apple IIGSs and Apple Macintoshes; all six schools have recently received IBM donations as well), laser printers, laserdisc players, CD-ROM, VCRs, LCDs, tape recorders, camcorders, telecommunications, and assorted other audio and video equipment. Some schools purchased science equipment and a variety of programs for their appropriate content areas emphasized.

Benefits of Integration: All six Level II MTS project directors indicated that technology expanded instruction far beyond what could have been achieved without it. For example, they talked about how technology aided in linking the past with the present, how much faster information could be accessed, how students could create and participate in simulations, models, replications, visual reflections, publishing, individual/collaborative writing, communication between populations, research, and production of multimedia programs, to name just a few. They also felt that teaching had improved tremendously as a result of technology integration, shifting the role of the teacher from that of a knowledge source to that of a facilitator. Teachers also became actively involved as learners and researchers. The response was overwhelmingly in favor of coupling technology with curriculum, and all directors emphasized that technology should not drive the project; integration was stressed as the method for best utilization.

IV. Implementation

Staff Development: Because technology use, for the most part, was not a skill of most teachers, all Level II MTS project directors found they needed a strong staff development component to even begin implementation of their project goals. Some staff members in each school were computer literate, having acquired literacy on their own either because of a personal interest, or as part of some other outside interest. Many, in fact most, were computer familiar, having heard about, seen, and even "played around with" machines. Most, however, had a lack of both familiarity and proficiency in other technological arenas, such as CD-ROM, laserdisc players, etc. Intensive staff development was required to begin projects, and was also necessary on an ongoing basis. Staff development was also necessary to

assist and support teachers as they began to integrate their newly acquired technology expertise into their teaching repertoire as a means of enhancing curriculum.

Impediments: All Level II MTS project directors felt that limited time and a lack of adequate financial resources were the two main impediments to appropriate and fully realized project implementation. Many of the directors were required to maintain a full or reduced teaching load while managing the project, which severely impeded their abilities to devote the enormous amounts of time required for staff training, support, and assistance. Many of the directors felt they needed additional time for their own continued professional development and skill enhancement. For many of them, much of the technology was as new and alien as it was for the rest of the staff. It was not unusual to hear them voice their concern that they were 'just one step ahead' as they began implementation. As training took place, however, the sentiment was that control and guidance became more predominant, and planning was far better facilitated.

In many instances, projects had to adjust original plans to accommodate reduced equipment or resources: this was primarily a result of increased costs from that originally quoted. Funding seemed never to be sufficient for implementing all the innovations originally planned. Also, because of the exponential growth of the technology industry, funding was inadequate to stay abreast of new and emerging technology. In some instances, equipment originally planned for was found to be already outdated and better replaced with some new, recently-marketed equipment when time to purchase; this proved often to be more costly.

In addition, directors cited delayed equipment and resource delivery schedules as an impediment to achieving project goals on time and as planned, thus requiring constant modifications to original planning. Many directors had to rely on the advice and direction given by sales representatives, which in many cases was reported to be erroneous or given in self-serving interests.

Finding appropriate training resources was always a problem, and insufficient clerical help created excessive paperwork for the directors. In all six Level II MTS projects , directors, staff, students, and administrators expressed regret that greater access was not available for all teachers and students in the school. project directors without strong district and site administrative support found that to be an impediment, slowing implementation progress.

IBM Partnerships: Due to the efforts of the AMTEC Coalition, IBM donated approximately one-half million dollars worth of equipment and software to the Level II MTS projects (approximately $80,000 each). Although directors expressed some frustration that promised delivery and training dates were not kept, and were in fact severely delayed (most of the projects began receiving equipment in late May and June, 1991), this equipment will be a valuable addition to the projects.

Evaluation: A variety of formative and summative evaluation measures were administered at all six Level II MTS projects as part of the projects, there were no consistent or standardized measures administered across sites. Staff and student surveys were the most frequent measures used to determine project effectiveness. Teacher/student observations were used, some portfolios (both written and video) were maintained and analyzed, and some analysis of student tests (e.g., CTBS, CAP) were used. Verbal exchanges during faculty meetings was relied upon to determine progress and needs. In instances where data needed to be quantified and analyzed, directors found it difficult at best. They expressed frustration at the lack of assistance for tabulating data and inexperience in analysis. There was a general feeling of willingness and desire to evaluate but a need for increased resources and service. As one director aptly stated, "We evaluated with great difficulty!"

During the 1990-91 school year, targeted for dissemination of projects, all but one Level II MTS project consistently administered surveys as a means of evaluating progress and effectiveness in trainings and/or

workshops. Again, directors expressed frustration at the enormous amounts of time required to tabulate and analyze the feedback received.

Collaboration with Other Agencies: All six Level II MTS project directors felt that assistance provided by CTP, CDE, and other agencies (county offices, etc.) was beneficial. In all instances, there was a request for continued support and assistance from these sources.

With the prompting and assistance of the original director of TASC II, all six Level II MTS projects formed a coalition, AMTEC, approximately two years ago. The primary objective was garnering contributions to the projects and collaborating in seeking grants and business partnerships. It was felt that such endeavors would be more successful if done jointly, rather than each individual project attempting, and often duplicating efforts, on its own. As a result of the combined efforts through the AMTEC coalition, IBM recently agreed to donate approximately $80,000 worth of equipment and software to each project: almost one-half million dollars worth collectively. Other such contributions are anticipated in the future, and indeed, several project directors felt that it would be these kinds of contributions that would ultimately maintain and support the projects when state funding is removed.

V. Project Dissemination

Marketing Efforts: All six projects exhibited a variety of marketing techniques ranging from brochures, lesson plans and/or booklets, teleconferences, presentations, workshops, seminars, consultations, visitation tours, journal articles, video overviews, etc. There was no predominant form of marketing, although all projects except one indicated they promoted and fostered both visitations and consultation activities. Training guides were felt to be the most beneficial product for schools interested in implementing technology into the curriculum at their sites. All directors felt additional assistance was needed from various agencies, including CTP, CDE, etc., to successfully market and share their project activities.

Adoption/Adaptation Assistance: Some of the Level II MTS projects indicated they had attempted to establish formal adoption agreements with adoption sites, but reported they had been largely unsuccessful. Schools were intimidated by the prospect of signing formal papers, and that they did not desire monitoring. Schools who had originally agreed to formal contracts later changed their minds and did not submit signed agreements. In many instances, project directors indicated that because schools did not adopt all aspects of their projects, the schools felt there would be some stigma, or penalty, if a formal agreement had been made. Project directors also felt that time and funding constraints prohibited them from adequately following up and working with adoption projects beyond the initial contact and assistance.

All project directors agreed that visitation to the Level II MTS projects sites to observe student and/or teacher use of technology first-hand was the best method for gaining information to adequately replicate the project.

> *As stated by one director, "A visitor can see tons of materials in one day, rather than taking months on their own to arrive at the same place."*

Person-to-person consultation, preferably live (as opposed to via telephone) was also felt to be critical in establishing adoptions, primarily because of the personal relationship which is developed and the support which ensues from such a relationship. Directors also indicated that having a plan for implementation, coupled with extensive in-services and/or training was also important. All reported that the AMTEC coalition had been very helpful in facilitating awareness and interest amongst other schools.

Cost Benefits: Overall, the Level II MTS project directors expressed that the Level II MTS dissemination model was a cost-effective means of providing information and training to other schools and districts throughout the state, for several reasons:

- It reduces the need for other schools to invest in trail and error efforts already undertaken by the Level II projects. Costly development is thereby reduced significantly by capitalizing on experiences already learned.

> *"They don't have to reinvent the wheel, in other words," stated one of the directors. "Our expertise and experience can save a school thousands of dollars."*

- It directly increased the teachers' use of the curriculum frameworks, thereby reducing costly staff development expenses to do so. The Level II projects have provided a cost-effective service by implementing technology and, at the same time, integrating its use with the curriculum frameworks.

- It has increased student motivation without the cost of additional support staff to do so. It has also improved student performance without having to hire tutors or install costly remediation, continuation or other such programs.

- It has prompted many schools to implement similar programs using their own funds or leveraging funds from other sources, thus eliminating costly expenses to the state for fund such endeavors.

VI. Project Support Resources

Impact:: All Level II project directors were in agreement that support resources were essential to project success and continued motivation to persevere through hard and difficult times, particularly considering the insufficient time and money. They noted the following as being especially helpful (in no particular order): CDE, CTP, ITV, other staff members, other Level II directors/staff, California Literature Project, Telecommunications of Orange County (TOC), district office assistance, local vendors, volunteer parents, and part time help (both clerical and professional). Many others were listed as well.

VII. Funding Support

Additional Funding: Additional funding and/or in-kind support was provided to all six Level II MTS projects in varying amounts. In most instances, projects were able to double their funding provided by the state, with one exception: the TASC II interim project director was unable to provide current information regarding funding support other than that received from the IBM donation.

Funding Sources: In all instances, the largest funding source other than that provided by the state was that required as 'matching' from the district office (or fiscal agent). Other funding came from a variety of sources including workshop fees, sales of publications, business contributions, SIP committees, CTP, ITV, IBM, Apple, and consultation fees.

VIII. Supporting and Impeding Factors

Supporting Factors: All Level II MTS project directors felt that funding from CDE greatly facilitated the integration of technology into curriculum at their sites; without the funding provided, they acknowledged that little, if anything would have been undertaken, let alone accomplished. Most directors also felt that the guidelines and parameters required by CDE were important and contributed to the success of the projects.

District office support and assistance (frequently through in-kind support such as part-time staff assignment to the project, assistance with paperwork, etc.) was cited in several instances as being essential to the projects' successes. Assistance from other agencies, including CTP, ITV, county offices, higher education institutions, etc., were also cited as consistently facilitating projects' successes. Additional facilitating factors included the directors' knowledge of effective dissemination strategies, the availability of outside consultants as resources, and the cooperation and interest of staff members in participating and seeing the project achieve its objectives.

Impeding Factors: Time and money, as discussed in section IV, were the two greatest impediments to all six Level II projects' successes. In addition, project directors felt that the supplemental district money which had to be waived if districts accepted AB 1470 monies greatly impeded both project effectiveness and dissemination efforts.

In terms of dissemination, directors who were required to continue teaching either full or part time found that their severely limited time made it difficult to devote their activities to spreading information about their projects and providing assistance to other schools. Travel time and costs, along with the absence of a clearly defined geographical area for project responsibility were seen as a tremendous burden to projects. To have to cover school requests across the entire state, pay for travel, and take time away from the project site was an excessive and unrealistic requirement. Directors also indicated there were limited incentives provided for dissemination activities, and two felt that packaging dissemination materials was difficult; they felt they lacked both experience and expertise in such endeavors.

IX. Project Outcomes

Student Findings from Self-Assessment Inventories and Site Visits All Level II MTS project directors and most site teachers felt that improvements in attitude and motivation were the major student outcomes realized from implementation of the projects in their schools. They indicated that student attitudes about learning in general had improved tremendously, thus generating a greater motivation about participating in their own learning assignments. They also felt that a tremendous shift in learning focus had occurred, which allowed students greater opportunities for involvement in the process of learning, rather than concentrating on the end products or ultimate outcomes, to the exclusion of everything else. Teachers particularly felt this was beneficial because it allowed more students to participate, promoted cooperative learning, and ultimately increased problem solving skills, initiative, grades, punctuality/attendance, classroom behavior, and study skills.

Findings from Student Surveys: Six-hundred eighty-nine surveys were returned from five of the six Level II project school sites (TASC II did not return any student surveys), representing 16 percent of the 4,399 students served by the projects. Students in grades one through twelve were surveyed.

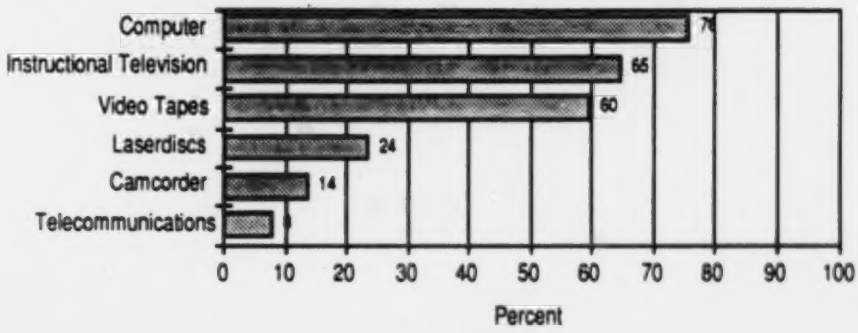
Technology Use: A variety of technologies were used by the Level II projects. As shown in Figure 1, almost all students stated they used computers at least once per week; few students use computers on a daily basis however. Approximately two-thirds of the students used instructional television and video

tapes once per week or more. Laserdisc players, camcorders and telecommunications were used by a smaller percentage of students.

Most students (92%) use computers in computer labs. A small percentage (12%) stated they use computers at lunch, in the library (20%), and after school 23%). Forty-three percent of the students have computers at home. Most students (69%) stated they use computers to do reports and assignments and to play games (73%).

Computers were cited by all students as being used predominantly in English, writing and reading instruction)75%). Computers were used in math (39%), social studies (41%), and science (23%).

Figure 1: Percent of Students Using Technology at Least Once per Week



Teacher Findings from Self-Assessment Inventories and Site Visits All six Level II MTS project directors and site teachers felt that teachers had benefitted tremendously as a result of the projects being implemented at their schools. Probably the most frequently cited outcome was the expansion of comfort levels for staff members in trying-out and experimenting with new and innovative technology. Once staff members overcame their initial fear and apprehension regarding the use of new 'tools,' the comfort level was transferred to other areas, including a willingness to try new methods and/or strategies in their day-to-day teaching. They also exhibited an increased amenity towards using resources beyond the assigned textbooks.

As might be expected, when teachers expanded their repertoires into unfamiliar and new areas, their excitement and enthusiasm towards teaching, much like the students' increased excitement and enthusiasm towards learning, increased significantly.

> *As one teacher very appropriately summarized, "I haven't been this enthusiastic about my teaching since I started, a long time ago. I actually get up in the morning and am excited about getting to school. I can't wait to try out something new that I've been working on, or to work with one of my colleagues to try and solve a problem I've encountered. I feel like I've been 'plugged back in' to the circuit."*

Teachers consistently reported that technology created an interesting phenomenon: rather than always having to be in control of knowledge, the classroom behavior and logistics, the work, (and everything else,) they had become willing to shift a lot of that responsibility to the students. In addition, they were willing to allow the students to act as teachers, frequently with the teacher being the student. For example, several teachers talked about how much they had been able to learn from student expertise with equipment. Others talked about how they frequently had to rely on students to teach them how to use certain programs or equipment, or to solve problems.

> *"What this has done for me," commented one teacher, "has been to completely reverse the role that I have always played in the classroom, putting me in the desk instead of behind the podium. And it's okay. I'm actually amazed at how much my students really know and how little credit I used to give them." Another commented about the increased trust between teacher and students: "Because I allow them to take a leadership role in so many instances, often even teaching me things, I am expressing a great deal of increased trust in them. They respect and appreciate that, and will often do extra, or are inspired to go one step further in their exploration, whatever that may be. They want to please me and retain that trust."*

Many teachers felt their presentation skills had increased as a result of the project. They were frequently called upon to demonstrate their proficiency at meetings, conferences, workshops, and/or school visitations.

> *"I really feel a tremendous confidence that didn't exist before," said one teacher. "I'm willing to stand up and tell others about what I am doing, and I feel so smart. I can't believe how far I've come and how much I know."*

Teachers also felt that their collegiality and sharing with one another had increased as a result of the project.

> *"In review, it seems as if the at-risk students benefit the most. For example, my students who are newly arrived from Asia have been able to learn the alphabet, learn to write and to read with computer programs."*

> *"One of my students, a recent immigrant, never turned in his work. His parents informed me that he had been abused at school in their home country. He was very obedient, but always destroyed his work. Finally, I gave him instruction in word-processing and graphics and then I just left him alone. He still wouldn't share his work with me, so I just ignored him. Then one day, he brought his friends into my class to show off his work. He now turns in his work to me."*
>
> *"I have two students whose spelling and handwriting were so poor that they would write the least amount possible. The computer changed them totally. They are now eager to write because editing is so simple. They are both fluent writers, able to communicate their thinking comprehensively and specifically."*

In other cases, teachers reported great gains with their "regular" students. For example:

> *"One student whose grade improved really became involved in her project. She said that the laser disc on abortion stirred her interest on the controversy. She had her study group take a trip to Sacramento. At the capitol, they interviewed lawmakers as well as 'people on the street.' This type of creativity and the latitude encouraged by the technology is a real benefit to our students."*
>
> *"I teach economics. In the past, detailed accounting sheets were done 'by hand' in a semester-long simulation. When my students switched to computers for generating accounting sheets they became more careful, more accurate and checked their work. They became concerned about how the finished product looked. They ended up with better scores as well as a better understanding of economic concepts."*

Program Outcomes: The greatest impact overall on the six Level II MTS projects' instructional programs was the increased familiarity teachers had with the curriculum frameworks. Both directors and teachers reported not only increased familiarity, but increased interest in understanding them and working to coordinate their classroom curriculum to align with them.

> *"I was never sure what all the fracas was about the frameworks before," said one teacher. "Now I understand and it makes sense to me. There's definitely a rationale, and they actually provide me with a model, an outline, to follow."*

Teachers also felt that attitudes of staff and administration towards the assessment of students was changing. They indicated that there was a general frustration at the old "paper and pencil" methods of assessment. With an increased awareness of the differing learning modes of students, there was an increased demand for being better able to capture student abilities.

> *"The way we've been testing students in the past is no longer acceptable, given the increased knowledge we have about student learning. Somehow we've got to assess the 'process' of learning, not just the end product," stated one of the teachers.*

Cost Benefits: Directors and teachers at all six Level II II MTS projects consistently agreed that funding for the projects was insufficient given the expectations and objectives which needed to be met. They also agreed that the services they were providing to other schools in the state was a tremendous service, extremely valuable in terms of the future education of youth, and that projects should be continued on an ongoing basis, with increased and more realistic funding. One of the directors appropriately stated,

> *"Again and again in education we tend to overtax our most capable resources, with little or no compensation. Projects such as these, which draw those enthusiastic and competent staff members, are continuously underfunded, and when they are successful it is due to the personal time and commitment made way beyond the teaching day."*

X. Recommendations

Project directors, teachers, students, and administrators agreed that the projects were, for the most part, successful, and offered a number of suggestions for improvements to ensure continued and increased successes, to expand the projects to increased numbers of schools, and to strengthen and refine the projects for maximum impact.

*1. **Funding Support***: This was the most consistently cited recommendation from the project directors and school staff/administration members to ensure the continued and enhanced effectiveness of technology/curriculum integration. There were several components to the recommendations, including the following:

- **Extend Funding Beyond** the 1991-92 School Year: Because of the perceived value of the project to other schools, many indicated that it was important to continue the dissemination activities for several years beyond 1991-92.

> *As one director stated, "It's kind of sad to go out of business about the time you are learning how to do it really effectively and have developed the skills to support it."* And another commented: *"A single dissemination year is not long enough to take advantage of the networking of adopters and those who hear of the project from adopters or other sources. We are affiliated with adopting schools, but we will not be able to accommodate many of them in the time remaining in this dissemination year."*

- **Increase the Funding Amount:** Consistently and overwhelmingly, the suggestion to increase funding to the projects was made. Because of the benefits to many audiences (students, teachers, administrators, programs, schools, districts, communities) found as a result of coupling technology to curricular areas, and because of the need for students to learn and use technology in real-life situations as preparation for the future demands placed on them in the world of work, it was felt that increased funding was necessary. All project directors indicated that additional funding would (a) increase the accessibility to greater numbers of students, (b) increase the equity of use amongst students currently vying for limited resources, (c) allow for purchasing to stay abreast of rapidly emerging new and innovative equipment and programs,

> *As one director stated: "I have been depressed this year over technology– more so than ever before. As my equipment gets older and older, falling apart, no maintenance, no upgrades, no new equipment, I see things getting worse, instead of better. Should be latter. As we grow, learning expands, should have more available to us to use and continue. It is truly getting worse. I'm very depressed."*

(d) facilitate hiring a full-time coordinator to manage each project effectively without being tied to teaching responsibilities, (e) allow professionals to receive appropriate and adequate stipends for their services, (f) increase professionalism of project staff members, (g) increase morale of project staff members, (h) allow for additional work with schools on an ongoing basis, rather than a one time attempt, (i) allow expansion to include schools other than adopters, (j) increase marketing products and capabilities, (k) hire outside help with evaluation and/or marketing activities, and (l) increase opportunities to participate in professional conferences, publications, et al, as a means of increasing dissemination.

> *"Technology is vital," stated the principal of the school. "We're just breaking the surface really. There isn't enough funding. We're having to do this on such a limited basis."*

2. Time: Project directors and staff/administration members made many recommendations regarding the time requirements of the projects, including the following:

- **Acknowledge and Commend Project Staff:** Because of the tremendous amounts of time that were frequently absorbed by school personnel, it was recommended that greater opportunities for acknowledgements and commendations be built into activities.

> *One teacher summarized the sentiments of many, stating, "We are constantly being asked to do one more thing in a long list of things that have to be done in education. There needs to be a point where we say, 'Enough,' and demand recognition and compensation for what we do." Another stated, "I don't mind doing the work; in fact, it's the work that energizes and motivates me. What I do mind is that I am expected to do it all at the same time as I am being required to do fifty other things. I would like some recognition that my time is valuable and appreciated."*

- **Finance Full-Time Project Staff:** Financing a full-time director, or directors, for each project, depending on abilities and desires to disseminate inside and outside the project site was felt to be a solution to many time constraints.

> *"They have no idea of the cost in terms of my time," said one of the project directors. "I would definitely add this in. If I write a continuation application next year, I'll include it. I don't know how any of us manages to do this."*

- **Extend Project Time Commitments:** Increasing the amount of time available to accomplish project objectives was felt to be one solution to time constraints.

> *"There is so much to be done, and I have trouble keeping up with it all," commented one of the teachers assisting with the project. "It would be nice if we didn't always have to produce everything in such a limited time frame. I often feel that I haven't done the best job as a result."*

- **Simplify Reporting Forms:** Increasing the simplicity of reporting procedures to the state and to other agencies was felt to be a solution to time constraints.

> *As one director summarized, "You need to simplify the forms and respect the time of overworked educators. Ask for realistic, purposeful information."*

3. Professional Development: Project directors repetitively expressed a need and desire to increase professional development opportunities.

> *"In most cases," stated one of the project directors, "there is inadequate funding for staff collaboration and professional growth which we believe to be essential to real and lasting change."*

They included the following recommendations:

- **Increase Professional Development and Collaboration Opportunities:** Increasing opportunities to interact with CTP personnel, as well as with other agencies, such as the Level I MTS projects, was reported to be a means of increasing project effectiveness. Again, it was felt that both additional time and money were required to do this effectively.

> *"I have had such valuable experiences with CTP," said one of the project directors. "I wish there were more opportunities to participate. I know that there is a lot of information and expertise there, but I just don't have the time or the energy to pursue it to its potential." And another stated, "The work I have done with CTP to assist with grant writing for new adopters has been beneficial. I have grown, members of my staff have grown, and I know the adopters appreciated our sharing information."*

- **Require Professional Development:** Because district support was perceived to be a strong factor in determining a project's implementation and development, several directors felt that district administrators and board members should be required to participate in staff development activities to increase their awareness of the project, to create greater ownership of the project (and thus greater support), and to facilitate better understanding of the project's goals and objectives. It was also felt that this participation would increase district involvement beyond an in-kind matching fund requirement.

> *According to one of the superintendents, "Because of my involvement in the project from the beginning, and my understanding of what was trying to be achieved, I have been supportive of every possible request. I would always look to answer the question, 'How can we make this work for kids?' not 'How can we get in your way?' when asked to do something."*

4. ***Evaluation***: Project directors expressed a need for assistance with evaluation activities and recommended the following:

- **Require Additional On-Site Evaluations:** Increasing requirements for on-site evaluations would increase data for site decision-making and feedback regarding progress.

> *"When we have problems or errors that are occurring in our project," commented the new project director, "that data serves us well. That data is really valuable information to us. When a teacher reacts negatively to what we're doing, we can use what they're telling us to see how this can work better for all teachers, for all students."*

- **Require Adoption/Adaptation Evaluations:** A measure of effectiveness of the Level II projects is the feedback from adoption/adaptation schools. By requiring formal and consistent

evaluation data from these schools, and from other schools who visit and/or consult with the project staff, a reliable profile of project effectiveness could be developed to assist in local and state decision-making.

> *"We administered surveys to some of our visitors," summarized one director. "Several chose not to fill them out or just forgot. Even though two of us worked on the questions, I felt they were pretty superficial and didn't solicit the kind of information that could be really useful to us."*

- **Provide Standardized Evaluation Forms:** Having prepared forms that had been field tested and determined appropriate to the projects would accomplish several objectives, including consistent and regular evaluations.

> *"I know that there are some guidelines for evaluation that are available. I recommend them to my adopters all the time," said one of the Level II MTS directors. "But what I need are some forms I can use that have already been developed. I can write up questions to ask staff and students, but I don't know how good the questions are. Nor do I have the time to labor over designing questions. It takes me a long time"*

- **Provide Outside Evaluation Assistance:** Having outside expertise to assist in establishing evaluation procedures and analyzing data would greatly increase abilities to plan, monitor, and make mid-course adjustments to insure achievement of projects' objectives.

> *"Evaluation is not my expertise," commented the project director. "I feel very weak. My principal says I choose not to do it, but I think it's much bigger than that. I need assistance."*

*5. **Dissemination Activities**:* Charged with dissemination activities, project directors offered suggestions to better facilitate the process, including the following:

- **Include All Content Areas:** Several project directors and school staff members felt that full integration of technology into the curriculum requires models in all subject areas. Currently, only three content areas (English-language arts, history-social science, and science) are represented by Level II projects, with a fourth (math) being added in 1991-92.

- Prepare Schools to Disseminate: Several schools have been actively involved in adoption of Level II projects at their own sites. Level II II MTS project directors felt that these exemplary schools could become dissemination sites with conscientious guidance and direction from Level II project staff.

> *"The relationship between Level II MTS projects and adopting/adapting projects is too loose to insure effective adoption."*

- They also indicated schools visiting or requesting assistance from the Level II projects should be prepared from the first contact to expect to assist in dissemination activities.

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Appendix A:

Level II Model Technology School Projects Assessment Instruments

- Self-Assessment Inventory
- Academic Model Technology Schools Interview Inventory
- Evaluation Planning Matrix
- Project Adoption Status Inventory
- Academic Model Technology Program Adoption Survey
- Academic Model Technology Schools Adoption Agreement Form
- Academic Model Technology Schools On-Site Evaluation
- Portfolio Assessment

ACADEMIC-TECHNOLOGY MODEL SCHOOLS PROJECT

SELF-ASSESSMENT INVENTORY

Far West Laboratory **April 1991**

This Inventory has been developed to follow the evaluation format specified by the state and the *California Educational Technology Assessment Project* (CETAP). The questions are organized in a chronological sequence to stimulate responses regarding your project from inception through evaluation. The Inventory is divided into eleven sections as follows:

I. Background Information
II. Planning
III. Content
IV. Project Implementation
V. Project Dissemination
VI. Support Resources
VII. Funding Support
VIII. Supporting and Impeding Factors
IX. Outcomes
X. Recommendations
XI. Other Information

Instructions for Completing the Inventory

• **Who should complete the Self-Assessment Inventory?** The person with primary responsibility for implementing the project should gather the necessary information and complete the Inventory with input from the project committee and others directly involved in the project.

• **Where can the information and data be obtained?** Sources of data and information for completing this form are as follows: 1) input from staff participants in the project, 2) input from the planning committee, 3) the original project proposal, 4) school records, and 5) project evaluation data. **Please provide data for the _____- _____ period only.**

• **How are the questions to be answered?** Most of the information collected should be based on observations and perceptions of the staff members most involved with the project. Carefully review the Inventory and then go back and answer the questions as honestly as possible. It is important to be honest about all responses so that the information can be used to provide a valid assessment of Level II MTS projects throughout the state. Projects and schools will not be judged in any way from this information.

• **When is the inventory due?** The Inventory must be completed and returned **NO LATER THAN** _____.

• **Where is the completed Inventory to be mailed?** When the Inventory has been completed, it must be returned to the address below.

• **How can assistance be obtained?** If any questions or problems arise while completing this Inventory, please contact _____ at the address/phone number below.

Address:_____

_____

_____

Phone: _____

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SECTION I: BACKGROUND INFORMATION

A. Project Background

1. Project name:_____

2. Grades served by the project (circle): **K 1 2 3 4 5 6 7 8 9 10 11 12 Adult**

3. Actual number of students known to be directly served by the project at this time: ..... #_____

4. Indicate the percentage of students in the following categories that were included in the original development of the project:

   a. Bilingual .. _____%
   b. Chapter I .. _____%
   c. Chapter II.. _____%
   d. ESL..... _____%
   e. GATE ..... _____%
   f. ROP..... _____%
   g. Special Ed. _____%
   h. Other..... _____%

   Other (describe)_____

B. Development/Demonstration Site Demographics

(This is the site where the project was developed and the primary site for visitors.)

1. School:_____
   Address:_____
   City:_____ ZIP:_____
   District:_____
   County:_____

CDS CODE						
County Code		District Code				
School Code						

2. School contact person:_____Title:_____ Ph:_____
   District contact person:_____ Title:_____ Ph:_____

3. Person responsible for completing this form:_____ Title:_____
   Ph:_____ Date:___/___/___

4. School enrollment (based on Fall 1990 CBEDS data):..... #_____

5. Total number of teachers: ..... #_____

6. Total number of schools served by project within the district:..... #_____

7. Project location (circle one):
   Rural 1
   Suburban 2
   Urban 3

8. School level (circle one):
   Elementary 1
   Middle/Junior High 2
   High.....3

9. Ethnic distribution of students:

   a. Asian ..... _____ %
   b. Black ..... _____ %
   c. Caucasian ..... _____ %
   d. Hispanic ..... _____ %
   e. Native American ..... _____ %
   f. Other: (Specify)_____.. _____ %

C. Project Description

1. Briefly summarize your project according to the following general categories:

a. Objectives/Expected Outcomes
b. Major Activities for Staff and Students
c. Results/Outcomes

SECTION II: PLANNING

A. Planning for Project Development

1. This project was developed primarily to...(circle all that apply):

Try something new	1	Stimulate restructuring	12
Explore an interest in technology	2	Prepare students for employment	13
Prepare students for college	3	Make teaching more exciting	14
Respond to administrative priority	4	Enhance the curriculum	15
Gain additional funding for the school	5	Facilitate student-centered learning	16
Increase technology use	6	Gain administrative experience	17
Increase school recognition	7	Acquire equipment	18
Respond to community priority	8	Provide for staff development	19
Respond to district priority	9	Other:_____	20
Improve student learning	10		
Improve student attitude	11		

2. Identify the group(s) that served as the planning committee for the project (circle all that apply):

School Site Council 1
Chapter I Committee 2
Committee established for the project 3
Other (describe):_____ 4

3. Identify the function(s) of the planning committee in project activities (circle all that apply):

Proposal development 1
Implementing the project 2
Advising on project changes 3
Advocating for the project 4
Monitoring & evaluating the project 5
Other (describe):_____ 6

4. Indicate the statement below that best describes the technology use plan (TUP) in the project demonstration school site as defined by this project (circle one):

Technology use is written into existing School Improvement Plan. 1
Technology use is written into existing Chapter I Plan. 2
Technology use is written into the _____(specify) Plan. 3
A separate TUP was developed for this project 4

5. Indicate the actual number of participants involved in planning and implementing the project in each of the following categories:

a. Teachers	#_____	e. Students	#_____
b. Parents	#_____	f. District personnel	#_____
c. School administrator(s)	#_____	g. Other:_____	#_____
d. Classified (non-certificated staff)	#_____		

4. Indicate the emphasis given to major educational and program priorities in the region that were addressed by the project during January 1990 - June 1991 (circle one for each item):

Need	Priority				
	Low		Moderate		High
a. Support of AB 1470 grant projects	1	2	3	4	5
b. Site-based technology use planning	1	2	3	4	5
c. Project awareness presentations	1	2	3	4	5
d. Project adoption training	1	2	3	4	5
e. Technical support for equipment utilization	1	2	3	4	5
f. Program planning and implementation	1	2	3	4	5
g. Responding to information requests	1	2	3	4	5
h. Disseminating information	1	2	3	4	5
i. Other priorities (list):_____	1	2	3	4	5

C. Modifications to Original Proposal Plan

1. Indicate the major changes from the original project plan in each of the following areas (circle as many as apply; if none apply, circle no numbers):

Objectives:
Student 1
Staff development 2
Learning resources management 3
Other:_____ .. 4

Activities:
Student 5
Staff development 6
Learning resources management 7
Implementation schedule 8
Other:_____ .. 9

Participants:
Grade levels 10
Number of students 11
Number of teachers 12
Other:_____ .. 13

Purchases:
Hardware 14
Software 15
Outside (consultant) resources 16
Other:_____ 17

Budget:
Distribution 18
In-kind support 19
Other:_____ 20

2. For each modification circled in Question 1, summarize the change from the original plan and the reasons for these changes.

Number Circled in Question 1	Describe the change	Reason for Change

SECTION III: CONTENT

A. Areas of Focus

1. Indicate the major areas emphasized by the project (circle **M** if major emphasis, **S** if secondary emphasis, or **N** if no emphasis):

Curriculum Areas

a. English-Language Arts ..... M S N
b. History-Social Science ..... M S N
c. Mathematics ..... M S N
d. Science ..... M S N
e. Foreign Languages ..... M S N
f. Visual and Performing Arts ..... M S N
g. Health Education ..... M S N
h. Physical Education ..... M S N
i. Vocational Education ..... M S N
j. Other:_____ .. M S N

School-Wide Areas

a. General technology use ..... M S N
b. Technology in the curriculum ..... M S N
c. School restructuring ..... M S N
d. Professional development ..... M S N
e. School climate improvement ..... M S N
f. Other:_____ .. M S N

Process Areas

a. Critical thinking ..... M S N
b. Cooperative learning ..... M S N
c. Study Skills ..... M S N
d. Self-esteem ..... M S N
e. Interest/attitude ..... M S N
f. Other:_____ .. M S N

B. Technology Applications

1. Indicate the type(s) of technology <u>used in the project</u> (circle **M** if major emphasis, **S** if secondary emphasis, or **N** if no emphasis):

a. Computers ..... M S N
b. Laserdisc/Interactive Video ..... M S N
c. Instructional Television (ITV) ..... M S N
d. Cable television ..... M S N
e. Audio/video production (Video cameras, camcorders, editing equipment) ..... M S N
f. Satellite downlink for ITV reception/distance learning ..... M S N
g. LCD Panels, Video Projectors ..... M S N
h. CD ROM ..... M S N
i. Technology for the handicapped ..... M S N
j. Science Lab Equipment (probes, microscopes, weather instruments, etc.) ..... M S N
k. Calculators ..... M S N
l. Telecommunications (telephone, modem, FAX) ..... M S N
m. Music (keyboards, MIDI interfaces, sound digitizers, audio equipment, etc.) ..... M S N
n. Networking of computers in classroom ..... M S N
o. Other: (describe)_____ ..... M S N

2. Indicate the software type(s) used by the project (circle **M** if major emphasis, **S** if secondary emphasis, or **N** if no emphasis).

a.	Word processing	M	S	N
b.	Desktop publishing	M	S	N
c.	Integrated Learning Systems (ILS)	M	S	N
d.	Computer Assisted Instruction (CAI) System	M	S	N
e.	Hypermedia/multimedia	M	S	N
f.	Graphics programs	M	S	N
g.	Electronic encyclopedia, reference	M	S	N
h.	Database, spreadsheet, other business software	M	S	N
i.	Music, voice, speech recognition	M	S	N
j.	Programming (Basic, Pascal, C, LOGO, Fortran, etc.)	M	S	N
k.	School management	M	S	N
l.	Other instructional software (Not CAI or ILS)	M	S	N
m.	Telecommunications software ...	M	S	N
	Other: (describe)_____ _____	M	S	N

3. ify the type(s) of equipment purchased since January 1990 as follows:

pe of Technology	Brand	Model	Quantity Purchased

4. List the five most widely-used software/video/laserdisc/CD-ROM titles for this project, and rate the effectiveness for each title in supporting the project's objectives:

> ***NOTE:*** *In order to rate the effectiveness of these products, we suggest that you ask for the assistance of those staff members who most frequently used them. This information will be added to the state evaluation database and shared among schools.*

Title	Publisher	Type of Media* (circle)				Level Of Effectiveness (circle) None		Moderate		Significant
1.		S	V	L	C	1	2	3	4	5
2.		S	V	L	C	1	2	3	4	5
3.		S	V	L	C	1	2	3	4	5
4.		S	V	L	C	1	2	3	4	5
5.		S	V	L	C	1	2	3	4	5

* Type of media: S = Software, V = Video, L = Laserdisc, C = CD-ROM

SECTION IV: PROJECT IMPLEMENTATION

A. Implementation Schedule

1. Planned starting date of the project (from proposal): ..... ___/___/___

2. Actual starting date (date that staff actually started implementing the project activities) ..... ___/___/___

3. If the actual starting date is different from the planned starting date, indicate the major factors that delayed implementation:

Factor(s):

B. Project Management

1. Indicate which person was assigned to manage the project at the school site (circle one):

None assigned	1	District office staff person	5
Classroom teacher(s)	2	Principal	6
Resource teacher	3	Other (title):_____	7
Consultant (non-district employee)	4		

2. Indicate the major sources of individual assistance for project implementation (circle all that apply):

None available	1	County office of education staff	6
A peer or fellow staff person	2	CTP	7
School resource person	3	ITV Agency	8
District resource person	4	Consultant (non-district employee)	9
Library/media resource staff	5	Other (specify):_____	10

3. Indicate the extent that individual assistance for project implementation was available (circle one):

Not at all	1	Usually	3
Seldom	2	Almost always or whenever needed	4

4. Rate the availability of the following resources (circle one for each item below):

Existing Resources	Availability				
	Not at all		Moderate		Significant
a. Administrative support and assistance (school and district)	1	2	3	4	5
b. Staff development opportunities	1	2	3	4	5
c. Planning and implementation time	1	2	3	4	5
d. Staff support and assistance	1	2	3	4	5
e. Access to existing hardware at the school site	1	2	3	4	5
f. Access to existing software/video programs at the school site	1	2	3	4	5
g. Other (describe):_____	1	2	3	4	5
h. Other:_____	1	2	3	4	5

5. Rate the extent to which the project was coordinated with other programs at the school/district level (circle one):

Not at all		Moderately		Significantly
1	2	3	4	5

Specify which programs: _____

6. Indicate the extent to which there was equitable access to project resources among participating students and teachers at the project development site in the designated area (circle one for each item below):

	Not at all		Moderate		Significant
a. Students:	1	2	3	4	5
b. Teachers:	1	2	3	4	5

C. Staff Development and Technical Assistance

1. Indicate the major sources of technical assistance (circle all that apply):

District....1
County office of education....2
CTP....3
Consultant (non-district employee)....4
ITV Agency....5
None available....6
Other (specify):_____....7

2. Indicate the types of technical assistance received (circle all that apply):

Installation and operation of equipment....1
Software selection....2
Technology integration....3
Problem solving/trouble shooting....4
Evaluation assistance....5
Finding resources....6
Other (specify):_____....7

3. For each workshop that was conducted between January 1990 and June 1991:
   - Provide the *workshop title* and *date*.
   - Check the appropriate column for *time spent*.
   - Enter the number of teachers and administrators that attended.
   - Check (√) the *type of workshop* conducted.
   - Check the the type(s) of *co-sponsors* and the assistance they provided.

Workshop Title	Workshop Date	Length of Wkshp.			Number of Attendees	Type of Workshop								Locally Initiated Workshop Topic	Co-Sponsors							
						AB 1470			Other													
		Half-Day or Less	1-2 Days	2-5 Days		Technology Use Planning	AB 1470 Grant Support	Sch. Application Reviews	Awareness	In-depth	In-depth with follow up	Other			School/District	County Office of Ed.	Business/Industry	College/University	Professional Organization	CTP	ITV Agency	
1.																						
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						
11.																						
12.																						
13.																						
14.																						
15.																						
16.																						
17.																						
18.																						
19.																						
20.																						

D. Evaluation Procedures

1. Complete the matrix below as follows:
   - Indicate the level of implementation for each evaluation activity conducted during the developmental phases of this project by circling the appropriate letter:

N	=	Not initiated (but applicable)
P	=	Partially completed
C	=	Completed
n/a	=	Not Applicable

   - If the activity was implemented, rate its usefulness by circling the appropriate number:

Activity	Implementation				Usefulness				
					Not Useful		Moderately Useful		Very Useful
a. Prepared a formal (written) project evaluation plan	N	P	C	n/a	1	2	3	4	5
b. Assigned staff to conduct the evaluation	N	P	C	n/a	1	2	3	4	5
c. Conducted the evaluation as planned	N	P	C	n/a	1	2	3	4	5
d. Modified the original evaluation plan	N	P	C	n/a	1	2	3	4	5
e. Administered assessment instruments	N	P	C	n/a	1	2	3	4	5
f. Documented progress of project implementation	N	P	C	n/a	1	2	3	4	5
g. Collected assessment data from students	N	P	C	n/a	1	2	3	4	5
h. Collected assessment data from staff	N	P	C	n/a	1	2	3	4	5
i. Collected assessment data from community	N	P	C	n/a	1	2	3	4	5
j. Analyzed assessment data	N	P	C	n/a	1	2	3	4	5
k. Prepared report for state and local use	N	P	C	n/a	1	2	3	4	5
l. Other (describe):_____	N	P	C	n/a	1	2	3	4	5
m. Other:_____ .	N	P	C	n/a	1	2	3	4	5
n. Other:_____ .	N	P	C	n/a	1	2	3	4	5

2. Did the project plan include on-going assessment activities (formative evaluation)? (circle one):
   Yes 1
   No 2
3. Was the project evaluation plan implemented as stated in the project proposal? (circle one):
   Yes 1
   No 2

   If yes, answer questions 4-6.

4. Indicate who was primarily responsible for the evaluation of your project (circle all that apply):
   School staff 1
   District staff 2
   County office of educ. staff 3
   Contract consultant 4
   Project director 5
   Other:_____ 6

5. Indicate the methods/data sources used to evaluate your project (circle as many as apply):

Quantitative

Standardized achievement test (e.g. CTBS) 1
California Assessment Program (CAP) 2
CAP Writing 3
Proficiency tests/criterion referenced tests 4
Portfolio assessment (with scoring rubric) 5
Student surveys 6
Student attendance 7
Teacher surveys 8
Records of computer use (logs) 9
School climate surveys 10
Other (describe):_____ 11
Other:_____ 12

Qualitative

Portfolio assessment (adapted to the project) 1
Student interviews 2
Case studies 3
Student journals 4
Teacher assessment of student work 5
Classroom observations 6
Teacher interviews 7
Workshop evaluation 8
Teacher journals 9
Changes in school plans 10
Incidental comments by students/staff 11
Other (describe):_____ 12
Other:_____ 13

6. Was an assessment of your project included in....(circle all that apply):

Self Study (school-based self assessment, part of SIP) 1
Program Quality Review (PQR) 2
WASC reviews 3
Other (describe):_____ 4
Site review assessment not conducted during project 5

If you circled any of the choices 1 - 4 in Question 6, answer the following:

Briefly summarize the comments about the project included in the assessment (describe):
Which aspects of the project, if any, were cited as exemplars for your school (describe):

7. Has the project conducted formal evaluations of the impact of any of the following services or activities between January 1990 and June 1991 (or the present time)? (circle **Y** or **N** for each item):

Service or Activity	Yes	No
Project adoption workshops	Y	N
Technology use planning workshops	Y	N
AB 1470 proposal writing workshops	Y	N
Other AB 1470 project assistance	Y	N
Project publications (flyers, newsletters, etc.)	Y	N
On-site technical assistance	Y	N
Telephone assistance	Y	N
Other (list):_____	Y	N
_____	Y	N
_____	Y	N

For any items in Question 7 that **Y** was circled for, briefly describe the evaluation procedure used (e.g., survey; who completed it and how many?) Please attach a copy of any reports on project activities.

Description:

E. Extent of Implementation

1. Were the original project activities completed as planned? (circle one):
   Yes 1
   No 2

2. Complete the matrix below as follows:
   - List the major project activities
   - Circle **P** if the activity was conducted as planned or **A** if the activity was added to the original grant proposal
   - Indicate the level of completion for each activity using the following scale:

N	=	Not initiated or abandoned
P	=	Partially completed
C	=	Completed
R	=	Repeated or continued in 1991-92

Major Activities for 1990-91	P = Planned A = Added		Level of Implementation			
1.	P	A	N	P	C	R
2.	P	A	N	P	C	R
3.	P	A	N	P	C	R
4.	P	A	N	P	C	R
5.	P	A	N	P	C	R
6.	P	A	N	P	C	R
7.	P	A	N	P	C	R
8.	P	A	N	P	C	R
9.	P	A	N	P	C	R
10.	P	A	N	P	C	R
11.	P	A	N	P	C	R
12.	P	A	N	P	C	R

F. Staff Activity

1. Estimate the level of staff effort dedicated to each of the following AB 1470 School-Based Project support activities (circle the appropriate rating for each activity):

Activity	Level of Effort				
	Low		Moderate		High
a. Project adoption workshops	1	2	3	4	5
b. Technology use planning workshops	1	2	3	4	5
c. Proposal development workshops	1	2	3	4	5
d. Site-level proposal development assistance	1	2	3	4	5
e. Assisting in state grant reviews	1	2	3	4	5
f. Newsletter articles related to AB 1470	1	2	3	4	5
g. School-based grant evaluation training	1	2	3	4	5
h. Other AB 1470 support activities (specify):					
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5
i. Other resources provided (specify):					
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

2. Estimate the percentage of project staff time allocated to each of the activities and complete the table below.

Activity Category	Project Director	Technical/Clerical Support	Contract Consultants	Other:_____ _____	Other:_____ _____
Overall planning and management					
State and local project meetings.					
Preparing dissemination materials					
Conducting awareness activites					
Completeing reports and surveys					
Providing assistance and training to adoptors					
District/school activities not directly related to the project					
AB 1470 project support					
Other: _____					
Other: _____					
Total Hours					

3. Use the table below to provide the number of editions and copies of each project-produced publication or product produced from January 1990 to June 1991 (estimate if completing this form before June).

Publications Produced or Distributed by Project	Number of Publications	Number of Copies Printed
Workshop Schedules		
Project Newsletters		
Announcements, Brochures, Flyers		
Other (specify):		
Total	n/a	

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G. Collaboration with Other Agencies

1. Complete the table below as follows:

   - Circle the appropriate number to indicate the estimated level of collaboration with each of the agencies listed.
   - Provide examples of important and/or frequent collaborative activities or projects

Possible Agency Collaborators	Level None Moderate Extensive	Examples
County Office(s) of Education	1 2 3 4 5	
California Technology Project (CTP)	1 2 3 4 5	
ITV Agencies	1 2 3 4 5	
Subject Matter Projects (California Writing, Literature, Math, etc.)	1 2 3 4 5	
IBM California Education Partnership	1 2 3 4 5	
Other Business and Industry	1 2 3 4 5	
Professional Associations (CUE, ACSA, CTA, etc.)	1 2 3 4 5	
SB 1882 Staff Development Consortia	1 2 3 4 5	
Educational Telecommunications Network (ETN)	1 2 3 4 5	
California Department of Ed. Educational Technology Unit	1 2 3 4 5	
Other (describe):	1 2 3 4 5	
Other:	1 2 3 4 5	
Other:	1 2 3 4 5	

H. IBM California Education Partnership

1. How do you anticipate using the IBM equipment and software?

Describe:

2. What training in the use of the equipment have you received to date?

Describe:

3. What support from IBM have your received for setup, use, etc?

Describe:

4. What concerns, if any, do you have about this contribution? (i.e. will the equipment be useful to the project)

Describe:

5. What are the primary benefits of this project?

Describe:

SECTION V: PROJECT DISSEMINATION

A. Marketing Efforts

1. At what time did this project begin dissemination activities? ..... **Month**____ **Year**____

2. Indicate the level of effectiveness of the following methods for stimulating awareness of your project (circle one number for each item below or circle n/a if this method was not used or if unable to determine impact):

Methods		Awareness Impact				
		None		Moderate		Significant
a. Brochures	n/a	1	2	3	4	5
b. Conference presentation	n/a	1	2	3	4	5
c. "Word of mouth"	n/a	1	2	3	4	5
d. Visitations by interested educators	n/a	1	2	3	4	5
e. CTP teleconferences	n/a	1	2	3	4	5
f. CSUNet information	n/a	1	2	3	4	5
g. Conference exhibits	n/a	1	2	3	4	5
h. AMTEC network	n/a	1	2	3	4	5
i. CDE-Produced video	n/a	1	2	3	4	5
j. District/school presentations	n/a	1	2	3	4	5
k. CTP Quarterly Newsletter	n/a	1	2	3	4	5
l. Articles in other publications	n/a	1	2	3	4	5
m. CDE referrals	n/a	1	2	3	4	5
n. AB 1470 grant information and training	n/a	1	2	3	4	5
o. Visits to school sites	n/a	1	2	3	4	5
p. Other (describe):_____	n/a	1	2	3	4	5
q. Other:_____	n/a	1	2	3	4	5

3. Indicate the products produced for dissemination and adoption of the project:

Description	Quantity Produced January 1990 - June 1991	Cost
a. Brochures - project specific		
b. Contribution to AMTEC brochures		
c. In-depth information portfolio		
d. Training guides		
e. Supplemental training materials		
f. Project-produced video		
g. Other (list):		
h.		
i.		
j.		

4. Indicate the type and frequency of dissemination activities:

Type	Frequency January 1990 - June 1991
a. Conference presentations	
b. Teleconferences	
c. Planned district presentations	
d. Individual contacts	
e. Formal regional workshops	
f. Site visitations	
g. Other (list):	
h.	
i.	
j.	

5. Please rate the support systems that actively helped disseminate information and training related to the project (circle the appropriate rating for each item or circle n/a if not used):

Agency		Level of Assistance None			Moderate	Significant
a. CTP Consortia	n/a	1	2	3	4	5
b. California Department of Education	n/a	1	2	3	4	5
c. County offices of education	n/a	1	2	3	4	5
d. ITV Regional Agencies	n/a	1	2	3	4	5
e. SB 1882 Regional Agencies	n/a	1	2	3	4	5
f. Professional organizations	n/a	1	2	3	4	5
g. CSUNet	n/a	1	2	3	4	5
h. Other (specify):_____	n/a	1	2	3	4	5
i. Other:_____	n/a	1	2	3	4	5

B. Dissemination Evaluation

1. Did you conduct a formal or qualitative assessment of the impact of dissemination activities? (circle one)

Yes 1
No 2

If yes, describe:

C. Adoption/Adaptation

1. List the minimum criteria or elements of the project you would consider essential for another site to be able to state that they adopted your project:

   a. _____
   b. _____
   c. _____
   d. _____
   e. _____
   f. _____
   g. _____
   h. _____

2. List the specific elements of your project which are adopted or adapted most often:

   a. _____
   b. _____
   c. _____
   d. _____
   e. _____
   f. _____
   g. _____
   h. _____

3. Have formal agreements been established between the project and the adoption sites regarding implementation of minimum adoption criteria and services to be provided to for the adoption? (circle one)

   Yes 1
   No 2

4. For each of the adoption evaluation activities listed below:
   - circle **Y** if the activity was conducted or **N** if it was not conducted
   - if the activity was conducted, give the number of adoption sites involved.

Activity	Conducted?		Number of sites
a. Helped AB 1470 adopters to design an evaluation plan	Y	N	#_____
b. Conducted follow-up visits or on-site evaluation of the level of adoption of the project	Y	N	#_____
c. Conducted follow-up telephone evaluation/monitoring of potential adoption sites	Y	N	#_____
d. Ask sites for written documentation or evidence of adoption	Y	N	#_____
e. Conducted survey to determine extent of adoption	Y	N	#_____
f. Other (specify):_____	Y	N	#_____

5. Complete the table below as follows:
   - fill in the school name and district for each of the sites that adopted or adapted the project
   - circle **Y** if the adoption/adaptation site is an AB 1470 School-Based Grant project or **N** if it is not
   - indicate the level of assistance that your project provided by circling the appropriate number:

     1 = Telephone contact only
     2 = On-site contact
     3 = Formal on-site training with follow-up
   - indicate the degree to which the site has adopted elements of your project by circling the appropriate number:

     1 = Minimal involvement
     2 = At least one major element in place
     3 = Most major elements replicated
   - circle **Y** if the site is an exemplary adoption/adaptation that could be suitable for dissemination by other educators if it is not. **Not Sure** if you do not know.

Adoption Site		AB 1470 Grant?	Level of Assistance Provided	Level of Adoption	Exemplary?
School	District				
1.		Y N	1 2 3	1 2 3	Y Not Sure
2.		Y N	1 2 3	1 2 3	Y N Not Sure
3.		Y N	1 2 3	1 2 3	Y N Not Sure
4.		Y N	1 2 3	1 2 3	Y N Not Sure
5.		Y N	1 2 3	1 2 3	Y N Not Sure
6.		Y N	1 2 3	1 2 3	Y N Not Sure
7.		Y N	1 2 3	1 2 3	Y N Not Sure
8.		Y N	1 2 3	1 2 3	Y N Not Sure
9.		Y N	1 2 3	1 2 3	Y N Not Sure
10.		Y N	1 2 3	1 2 3	Y N Not Sure
11.		Y N	1 2 3	1 2 3	Y N Not Sure
12.		Y N	1 2 3	1 2 3	Y N Not Sure
13.		Y N	1 2 3	1 2 3	Y N Not Sure
14		Y N	1 2 3	1 2 3	Y N Not Sure
15.		Y N	1 2 3	1 2 3	Y N Not Sure

6. Please indicate the degree to which each of the following factors serves as an incentive for you to encourage other districts/schools to adopt or adapt your project (circle the appropriate rating for each item or circle n/a if not used):

Factor		Level of Incentive				
		None		Moderate		Significant
a. Recognition for the project	n/a	1	2	3	4	5
b. Recognition of the parent district	n/a	1	2	3	4	5
c. To improve the project's evaluation	n/a	1	2	3	4	5
d. Desire to see others use the project	n/a	1	2	3	4	5
e. Meeting state requirements	n/a	1	2	3	4	5
f. Opportunity to collaborate with other sites	n/a	1	2	3	4	5
g. To help students learn	n/a	1	2	3	4	5
h. Income for sale of materials/services	n/a	1	2	3	4	5
i. Satisfaction of having others value the project	n/a	1	2	3	4	5
j. Enhancement of project to improve chances of future funding	n/a	1	2	3	4	5
k. Other (specify):_____	n/a	1	2	3	4	5
l. Other:_____	n/a	1	2	3	4	5

SECTION VI: PROJECT SUPPORT RESOURCES

A. Services

1. Indicate whether the district or school has assigned a district staff person to assist with the project (circle one):

Full-time 1
Part-time 2
None 3
As needed 4
Other (describe):_____ 5

2. If applicable, indicate the extent that this person was able to help plan and implement the project (circle one):

	Not at all		Moderately		Significantly
	1	2	3	4	5

3. List any other sources of external support that you utilized and the degree of value for each service:

List:

SECTION VII: FUNDING SUPPORT

A. Funding Sources

1. Fill in the table below.

Revenue Sources and Amounts Received to Conduct Project Activites for January 1990 - June 1991		Amount Received
Direct Funding Sources	State AB 1470 funds	$
	Workshop fees	
	Service fees from adoption/adaptation sites	
	Direct fiscal agency/host contribution	
	Sale of publications, etc.	
	Business contributions	
	Other grants (list):	
	Other (list):	
Total direct cash revenue for Jan. 90 - June 91		

Estimated value of in-kind support (from Page 25) for Jan. 90 - June 91	
Total revenue for Jan. 90 - June 91	

1991-92 anticipated changes:

2. Since the project was initiated, please indicate the value of project support received from state, fiscal agent and donated sources.

	Project Start - Jan 90	Jan. 90 - June 91	July 91 - Dec. 92 (Anticipated)
AB 1470	$	$	$
Fiscal Agent			
Value of Donations			

3. Complete the table below as follows:
   - Indicate the level of in-kind* support received by the project from each source by circling the appropriate number.
   - Provide an example of the in-kind support.
   - Enter the estimated dollar value of the in-kind support that your consortium received.

Sources of Support and Contributions	Level None Moderate Extensive	Examples	Estimated Value
Fiscal Agent or Host Agency	1 2 3 4 5		$
County Offices of Education	1 2 3 4 5		
School District(s)	1 2 3 4 5		
Other Level II Projects	1 2 3 4 5		
Calif. Tech. Project (CTP)	1 2 3 4 5		
ITV Agencies	1 2 3 4 5		
Colleges and Universities	1 2 3 4 5		
IBM California Education Partnership	1 2 3 4 5		
Business/Industry	1 2 3 4 5		
Other (describe):	1 2 3 4 5		
Other:	1 2 3 4 5		
Other:	1 2 3 4 5		
Other:	1 2 3 4 5		

Total In-kind Support	$

* Include volunteer services, donations, hardware/software, or anything else that can have a dollar value assigned to it.

1991-92 anticipated changes:

B. Project Expenditures

1. Enter separately the amount of the AB 1470 funding, fiscal agent funding, and donations expended for each of the budget categories indicated:

Project Expenses for January 1990 - June 1991

(Round to the Nearest $)

	Explanation of Expenditure	AB 1470 Funding	Fiscal Agent Funding	Estimated Value of Donations
1000 Professional Staff Salaries	Project Coordinator			
	Professional Staff			
	Other:			
	Subtotal for 1000 Series	$	$	$
2000 Classified/Support Staff Salaries	Technical Support			
	Clerical Support			
	Other:			
	Subtotal for 2000 Series	$	$	$
3000	Staff Benefits:	$	$	$
4000 Materials/Supplies	Printing			
	Software			
	Office Supplies			
	Other:			
	Subtotal for 4000 Series	$	$	$

(Round to the Nearest $)

		Explanation of Expenditure	AB 1470 Funding	Fiscal Agent Funding	Estimated Value of Donations
5000 Contract Services/Expenses	Services	Consultants			
	Expenses	Facilities			
		Travel			
		Subtotal for 5000 Series	$	$	$
Indirect Costs: Indirect costs are not a required item and can only be entered when a rate has been established. Indirect costs computations exclude the 6000 category. Rate_____%					
6000 Capital Outlay	Equipment	Computers			
		Software			
		Other:			
		Subtotal for 6000 Series	$	$	$
		TOTALS	$	$	$
				GRAND TOTAL	

1991-92 anticipated changes:

SECTION VII: SUPPORTING AND IMPEDING FACTORS

1. Review each of the following factors and:
   - Rate the extent to which each was a facilitating factor or an impediment to the ability of the consortium to deliver effective services by circling a number from the following scale:

- 3	= Major impediment
- 2	= Moderate impediment
- 1	= Slight impediment
0	= Not a factor that affects agency operation
+1	= Slight facilitating factor
+2	= Moderate facilitating factor
+3	= Major facilitating factor

   - Add any comments in the spaces provided (especially if a +3 or -3 was circled).

	Rating (circle one) (-) ← → (+)
A. Deducation of AB 1470 funds from LEA Supplemental Grant funding	-3 -2 -1 0 +1 +2 +3
Comments:	
B. Lack of geographically defined area to serve	-3 -2 -1 0 +1 +2 +3
Comments:	
C. Interaction with the CTP	-3 -2 -1 0 +1 +2 +3
Comments:	
D. Fiscal agent for the project	-3 -2 -1 0 +1 +2 +3
Comments:	
E. California Department of Education (CDE) guidelines and expectations	-3 -2 -1 0 +1 +2 +3
Comments:	
F. County office(s) of education	-3 -2 -1 0 +1 +2 +3
Comments:	
G. Technology manufacturers/vendors	-3 -2 -1 0 +1 +2 +3
Comments:	
H. Colleges and universities	-3 -2 -1 0 +1 +2 +3
Comments:	
I. Business and industry	-3 -2 -1 0 +1 +2 +3
Comments:	
J. Packaging materials for dissemination	-3 -2 -1 0 +1 +2 +3
Comments:	

Rating (-) ← | → (+)

K. Level of state (AB 1470) funding	-3 -2 -1 0 +1 +2 +3
Comments:	

L. Availability of staff and/or consultants to provide professional development	-3 -2 -1 0 +1 +2 +3
Comments:	

M. Evaluation expectations for dissemination	-3 -2 -1 0 +1 +2 +3
Comments:	

N. Knowledge of effective dissemination strategies	-3 -2 -1 0 +1 +2 +3
Comments:	

O. Incentives to disseminate outside the district	-3 -2 -1 0 +1 +2 +3
Comments:	

P. Describe and rate other factors that influence the ability of the project to deliver services:	
1.	-3 -2 -1 0 +1 +2 +3
Comments:	
2.	-3 -2 -1 0 +1 +2 +3
Comments:	
3.	-3 -2 -1 0 +1 +2 +3
Comments:	
4.	-3 -2 -1 0 +1 +2 +3
Comments:	

1991-92 anticipated changes:

SECTION IX: PROJECT OUTCOMES (at the development/demonstration site)

A. Student Outcomes

1. To what extent did the project actually meet its student objectives? (circle one): ..... Not at all 1 2 3 4 5 Moderately Significantly

> ***NOTE:*** *To answer this question, review the student objectives as specified in the project proposal.*

2. For each of the following categories, rate the observed change among students participating in instructional activities of this project (circle one for each item below; circle **n/a** if item does not relate to your project):

To what extent has the project INCREASED students'...	Level of Increase: Not at all		Moderately		Significantly	
a. Attendance/punctuality	1	2	3	4	5	n/a
b. Interest in technology use	1	2	3	4	5	n/a
c. Frequency of technology use	1	2	3	4	5	n/a
d. Proficiency in the use of technology	1	2	3	4	5	n/a
e. Classroom behavior and study skills	1	2	3	4	5	n/a
f. Problem-solving and higher order thinking skills	1	2	3	4	5	n/a
g. Knowledge and skills in subject areas emphasized by the project	1	2	3	4	5	n/a
h. Interest in school	1	2	3	4	5	n/a
i. Report card grades	1	2	3	4	5	n/a
j. Achievement test scores	1	2	3	4	5	n/a
k. Quality of student work completed	1	2	3	4	5	n/a
l. Student initiative	1	2	3	4	5	n/a
m. Other (describe):_____	1	2	3	4	5	n/a

3. For each area where **4** or **5** was circled in Question 2, elaborate on the student change and how the project contributed to the change.

Item letter from Question 2	Describe the student change and how the project contributed to the change

4. Considering the overall funding and effort of the project, indicate the statement below that best represents the project team's assessment of student benefits (circle one):

Benefits were clearly not worth the effort 1
Some benefits for students were attained but could have been accomplished in other more cost-effective ways 2
Moderate benefits for students were attained that probably could not have been attained without the project 3
Important benefits for students were attained and the effort was clearly worth it 4

B. Staff Outcomes

1. To what extent did the project actually meet its staff development objectives? (circle one): Not at all **1** **2** Moderately **3** **4** Significantly **5**

> ***NOTE:*** *To answer this question, review the original staff development objectives as specified in the project proposal*

2. For each of the following categories, rate the observed change among teachers participating in instructional activities of the project (circle one for each item below; circle **n/a** if item does not relate to your project):

To what extent has the project INCREASED teacher ability to:	Level of Increase: Not at all		Moderately		Significantly	
a. Expand use of resources beyond textbook and other curriculum materials	1	2	3	4	5	n/a
b. Develop concepts/understanding not otherwise possible to teach	1	2	3	4	5	n/a
c. Encourage problem-solving and critical thinking	1	2	3	4	5	n/a
d. Support student-centered learning	1	2	3	4	5	n/a
e. Make teaching more interesting	1	2	3	4	5	n/a
f. Provide interactive experiences with colleagues	1	2	3	4	5	n/a
g. Provide interactive experiences with students	1	2	3	4	5	n/a
h. Provide simulation experiences	1	2	3	4	5	n/a
i. Gain confidence in their own technology use	1	2	3	4	5	n/a
j. Integrate technology into the curriculum	1	2	3	4	5	n/a
k. Evaluate an educational technology program	1	2	3	4	5	n/a
l. Other (describe):_____	1	2	3	4	5	n/a

3. For each area where **4** or **5** was circled in Question 2, elaborate on the change and how the project contributed to the change.

Item letter from Question 2	Describe the change and how the project contributed to the change

4. Rate the degree to which the project led to increased staff usage of technology in the classroom (circle one): Not at all **1** **2** Moderately **3** **4** Significantly **5**

5. Considering the overall funding and effort of the project, indicate the statement below that best represents the project team's assessment of teacher benefits (circle one):

   Benefits were clearly not worth the effort 1
   Some benefits for teachers were attained but could have been accomplished in other more cost-effective ways 2
   Moderate benefits for teachers were attained that probably could not have been attained without the project 3
   Important benefits for teachers were attained and the effort was clearly worth it 4

C. Program Outcomes

1. Indicate the extent that this project improved the management and coordination of learning resources (circle one): ... Not at all 1 2 3 4 5 Moderately Significantly

2. Indicate the extent that this project increased staff familiarity with the California Curriculum Frameworks (circle one): ..... Not at all 1 2 3 4 5 Moderately Significantly

3. Indicate the extent that this project stimulated staff use of the California Curriculum Frameworks (circle one): ..... Not at all 1 2 3 4 5 Moderately Significantly

... any aspects of this project incorporated into the School Improvement Plan (SIP) or School ...elopment (SB 1882) Plan? (circle one):

....1
...me ext... 2
....3

5. Indicate the extent that the project is likely to become institutionalized and continued as part of the overall school instructional program (circle one):

Not at all 1
Some parts ... project 2
Most elem... the project 3
All elements of the project 4
The project will expand 5
Other (describe): _____ 6

6. Have other ...ology uses devel... your school since the implementation of the project? (circle one)

Yes 1
No 2

If yes, did th... er uses occur be... of the L... II proje...

Definitely 1
Probably 2
Not sure 3
No 4

Describe other u... of technology th... id occur because of the Level II project:

7. Describe any other impact that the project has had on the school program:

Description:

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D. Impact of Services

1. Complete the table below as follows:
   - If a service was not offered, circle n/a
   - Rate the effectiveness or value to participants of each service that was offered by circling the appropriate number. Feedback can range from completion of formal evaluation instruments to informal comments and testimony.
   - Rate the need for increased service by circling the appropriate number.
   - Circle S if your ratings are based on data obtained from a survey of users or C if based on informal comments, testimony, and/or your own general perception.

Activity	Effectiveness or Value						Need for increased Service						Data Source	
		Not at All		Moderate		High	None		Moderate		High			
Project adoption workshops	n/a	1	2	3	4	5	1	2	3	4	5		S	C
AB 1470 tech. use planning workshop	n/a	1	2	3	4	5	1	2	3	4	5		S	C
AB 1470 proposal writing workshops	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Periodic Level II meetings	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Project newsletters	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Project awareness sessions at conferences	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Teleconferences	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Technology evaluation training	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Other: (specify):_____	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Other:_____	n/a	1	2	3	4	5	1	2	3	4	5		S	C
Other:_____	n/a	1	2	3	4	5	1	2	3	4	5		S	C

1991-92 anticipated changes:

E. Cost Benefits

1. Given the objectives and expectations of Level II dissemination, has the funding level for your project been (circle one):
   Very insufficient 1
   Somewhat insufficient 2
   Adequate 3
   More than adequate 4

2. Would it have been possible to accomplish what your project has achieved without the existence of in-kind funding and volunteer assistance (circle one):
   Yes 1
   No 2
   Not sure 3

Comments:

3. To what extent would your project continue to operate if the state (AB 1470) funding were terminated (circle one):

Discontinue all services 1
Discontinue out of district services 2
Continue at the same level 4

Comments:

4. If state (AB 1470) funding were terminated, would you apply for other funding to continue the project? (circle one):

Yes 1
No 2
Not sure 3

5. In general, do you believe the Level II dissemination model is a cost-effective approach to providing information and training about exemplary models to other districts (circle one):

Yes 1
No 2

If no, explain better alternatives:

F. Unanticipated Outcomes

What were the surprises or important learnings that you did not expect when you began this project? Describe the unanticipated outcomes or findings for each of the following categories:

a. Students:
b. Staff:
c. Program:
d. Other:

ACADEMIC MODEL TECHNOLOGY SCHOOLS
INTERVIEW INVENTORY

FAR WEST LABORATORY

Project Title_____ Date of interview____/____/____

Interviewer_____ School sites visited_____

Staff Interviewed (list names and titles):_____

Contact Person(s) for followup questions:_____ Tel: ( )_____

BACKGROUND

1. What initially prompted the development of this project?

2. Did this project evolve from an AB 803 project? Explain.

3. Would this project have evolved without an AB 803 project?

4. What are the student and staff needs addressed by the project?

5. What are the major goals, or expected outcomes, of the project?

6. Describe the support received for the development of the project (from school, district, etc.)?

7. Comment on the level and type of direction and support provided by the California Department of Education for the development, implementation, and dissemination of this project:

PLANNING

1. Who was primarily involved in planning and developing this project?

2. Did you involve an existing school committee such as the site council?

3. What kind of support/involvement did the committee provide?

4. [illegible] you work with [illegible] subject matter project(s), the CTP and/or other agency?

5 [illegible] important [illegible] planning [illegible] he success of this project?

6. Did you develop a Technology Use Plan (TUP)? (A TUP is an adaptation of an existing school plan to include the major technology elements of the project)

7. [illegible]scribe the ex[illegible]of district involvement in the planning of the project:?

8. Is there a district educational technology plan that supports this project?

9. Explain any major changes from your original proposal over the past years:

CONTENT

1. Describe the what the project does in the classroom - the specific interventions

2. What are the California Curriculum Framework topics emphasized by the project?

3. How does the project expand instruction beyond what could be done without technology

4. Describe some of the behavioral and affective areas the project was designed to improve:

5. What technologies are emphasized in the project and why were they selected?

IMPLEMENTATION

1. Explain the staff development that was needed to develop and implement the project

2. To what extent were the planned objectives of the project actually implemented?

3. Were there things you wanted to implement but could not?

   If not, why?

4. Describe some of the major impediments to development and implementation?

5. Describe some facilitating factors that assisted implementation:

6. Describe any changes in staffing that impacted implementation:

EVALUATION

1. Describe the evaluation design for the project:

   Summative
   a. Outcome indicators

   b. Target participants

   c. Data sources (surveys, tests, etc.)

   Formative
   a. Implementation indicators (planning, staff development, etc.)

   b. Data Sources (self study, observations, etc.)

   Evaluation Implementation
   a. Assessment schedule

   b. Who collected the data (teacher, staff, other)

   c. How was the data quantified and analyzed

   d. Was an evaluation report developed (if yes provide a copy)

2. Comment on the availability of resources and direction provided by the state, the CTP, and other sources for the evaluation:

3. What could be done to improve the evaluation process for Level II projects?

PROJECT SPECIFIC OUTCOMES

1. Major student outcomes that resulted from the project intervention:

2. Major staff outcomes that resulted from the project intervention:

3. Major school/district outcomes that resulted from the project intervention:

4. Unanticipated outcomes and findings:

5. Please tell a story about a student(s) that benefited from the intervention made possible by this project. Start by telling what the student was able to do before the project, then how he began to change during the project experience, and finally what the student could do (or express) after being involved in the project.

6. Please tell a story about a teacher that benefited from the project (as with the student):

7. Describe the main findings that suggest reasons why a school would want to adopt or adapt your project:

8. Describe the extent to which the technology and software effect the desired outcome(s) for students?

9. Could the observed effects of the project on students have been produced by staff enthusiasm and leadership **without the technology**? yes___ no___

Explain:

ADOPTION/ADAPTATION

1. Describe the specific products of the project that can be adopted or adapted (Include both promising practices and specific products such as software, guidebooks, lesson plans, and others)

2. Describe the minimum criteria for another school to replicate or adopt the project (what does a school need to do to be able to successfully replicate the project?)

3. Describe the AB 1470 grant writing activities you conducted to assist adoptions (include grant writing help, providing boilerplate documents, telephone assistance.

4. How many adoptors were you able to establish formal "adoption agreements" that describe the collaborative responsibilities of the Level II project and the adoption site?

5. How many schools **within the district** would you consider to be credible or faithful adoptors of the project?

6. How many schools **outside the district** would you consider to be credible or faithful adoptors of the project?

7. Provide the names of the school districts/sites and contact persons for the schools that produced faithful or credible adoptions of the project (CETAP will followup with telephone interviews of these sites)

8. Provide names of schools districts/sites that said they would adopt but have **not used the services** of the Level II project to assist the adoption:

9. Describe what adoptors did or what situations made them successful adoptors:

10. Describe the major activities and services that you provided to assist schools to adopt your project

11. Describe what the Level II staff did that was most effective in producing successful adoptions:

12. Try to describe the cost-benefits to schools of having available projects such as the Level II projects that are already packaged and ready to adopt or adapt

13. Please tell a story about an adoptor that benefited from adaptation of this project. Start by telling what the school or program was able to do before the project, then how it began to change during the project adoption, and finally what the school was like after being involved in the project.

DISSEMINATION AND MARKETING

1. Describe the project awareness procedures used by the project: (these may include conferences, brochures, video tapes, road shows, teleconferences, word-of-mouth and other)

2. Which awareness and marketing procedures seemed to produce the greatest impact in terms of adoptions or adaptations of the project?

3. What tended to be the most effective service agency in assisting the dissemination of project awareness information?

FUNDING AND PARTNERSHIP SUPPORT

1. Tell me the funding levels received for each year of the project:

2. What is the estimated cost, including equipment and training for a school to adopt the major elements of your project:

3. Estimate the percentage of funding for dissemination activities during 1989-90 and 90-91.

4. What components of the project seemed to be underfunded?

5. Describe the types of "in-kind" support provided to the project by the school district.

6. Describe the "in-kind" or donation support from business partnerships provided for the project:

7. Was sufficient support provided by the school-based grant program to fund the adoptors of the project.

8. Please comment on the extent of implementation by this project of the IBM partnership component:

9. Please comment on the extent of adoption or adaptation of the IBM component: by other schools:

10. If you did not receive the AB 803 and later AB 1470 funding with the related guidelines for project planning and implementation, to what extent do you believe that the project would have been implemented?

THE FUTURE

1. It is likely that funding will be available. . . do you plan to continue the project next year? yes___no___If not explain:

8. Describe how you plan to use the funding that will be available for 1991-92.

10. What could be done by the CTP to facilitate dissemination of the project?

9. What could be done by the state facilitate implementation of the project for 1991-92 and beyond.

10. Do you support continuation of the AMTEC Coalition? ,:

COMMENTS AND RECOMMENDATIONS

AMTP 1990-91 Evaluation Planning Matrix

CIP Title_____ School_____

Teacher_____ Date__/__/__

Evaluator _____

Data Sources/Evaluation Measures and Procedures

Data Sources/Evaluation Measures and Procedures	✓ Selected Procedure	Student Indicators: Subject Matter*	Student Indicators: Cognitive Skills	Student Indicators: Study Skills	Student Indicators: Affective Behavior	Student Indicators: Technology Applications	Staff Indicators: Staff Development Impact	Staff Indicators: Level of Use	Staff Indicators: Learning Resources Mgmt	Staff Indicators: Technology Applications	Project Indicators: Project Management	Project Indicators: Impediments	Project Indicators: Support Factors	Project Indicators: Implementation Level	Data Type: Qualitative	Data Type: Quantitative	Collected From: Students	Collected From: Teachers	Collected From: Project/Dist. Staff	Project Level: CIP Specific	Project Level: Project Wide
Report Card Impact Assessment (AMTP Influence on Student Grades)		●	◐	●	●	○	○	○	○	○	○	○	○	○	○	◐	○	●	○	○	○
Student Surveys (Student Reactions to Project Interventions)		●	◐	◐	◐	●	○	○	○	○	○	○	○	◐	●	◐	●	○	○	◐	●
Portfolio Assessment (Student Work Samples Adapted to Selected CIPs)		●	●	●	◐	●	○	○	○	○	○	○	○	○	●	◐	●	○	○	●	○
District/CAP Writing Samples		●	◐	◐	○	○	○	○	○	○	○	○	○	○	○	●	○	○	●	●	○
Proficiency Tests/Criterion Referenced Measures		●	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	●	●	●	○
Standardized Achievement Test (eg. CTBS)		●	◐	◐	○	○	○	○	○	○	○	○	○	○	○	●	○	○	●	○	○
California Assessment Program (CAP)		●	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	●	○	○
Case Studies (Based on Portfolio and Performance Assessment)		●	●	●	●	●	○	○	○	○	○	○	○	○	●	○	●	●	○	○	○
Student Attendance		○	○	●	◐	○	○	○	○	○	○	◐	○	○	○	●	○	○	●	●	○
Classroom Observations		◐	◐	◐	◐	●	◐	◐	●	●	○	●	●	●	●	○	○	●	●	●	○
Inventory of Teacher Reactions to AMTP Strategies and Interventions		◐	◐	◐	◐	●	●	◐	●	●	◐	●	●	◐	●	○	○	●	○	○	●
Records of Computer and Other Technology Use (Logs)		○	○	○	○	●	○	○	○	●	○	○	○	○	○	○	●	●	○	●	○
Individualized Affective Measures		○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	●	○	○	●	○
Review of SIP Plans and Self Study/PQR Reports		○	○	○	○	◐	●	◐	◐	◐	●	●	○	○	●	○	○	○	●	○	●
Teacher Interviews (Structured Interview)		◐	◐	◐	◐	●	●	●	●	●	◐	●	○	○	○	○	○	●	○	●	●
Curriculum Alignment Criterion Assessment		○	○	○	○	○	○	○	◐	◐	○	○	○	○	○	○	○	●	●	●	○
Project Product Assessment		○	○	○	○	○	○	●	◐	●	○	○	○	●	○	○	○	●	●	●	○
Workshop Evaluations		○	○	○	○	○	●	◐	◐	◐	◐	◐	○	◐	●	○	○	●	○	○	◐
Project Plan Activities Level of Implementation		○	○	○	○	◐	◐	◐	◐	◐	●	●	○	●	○	●	○	●	●	●	◐
Business Partnership Contributions		○	○	○	○	○	○	○	○	○	○	○	●	○	●	○	○	○	●	○	●
Parent Involvement/Participation Survey		○	○	○	○	○	○	○	○	○	○	○	●	○	●	○	○	●	●	●	○
Assessment of Needs/Priorities Over Time		○	○	○	○	○	○	○	○	○	○	○	◐	●	●	◐	○	●	●	●	●
Incidental Comments by Students/Staff		◐	◐	◐	◐	◐	○	○	○	○	○	○	○	◐	●	○	●	●	●	●	●

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* Subject Matter may include: English-Language Arts, History-Soc. Sci., Math, Science, Industrial Arts, Visual-Perf. Arts., Health Ed., Environmental Ed., Foreign Languages, etc.

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Project Adoption Status Inventory

This inventory is designed to (1) provide adopters with the minimum criteria for the adoption of the project and (2) gather information about the degree to which the project has been adopted. The person responsible for completing the inventory should be someone who is directly involved in the implementation of the program on a "classroom level" or school and/or district-wide basis. "Classroom level only" means the activity can only be observed on a self-contained basis in a single classroom and is supervised by a "school and/or district-wide" staff member. Indicate below with an "X" under the appropriate category on the right if the activity listed on the left has been, or is actually being carried out.

School/District

Person completing Form

/ /
Date

Activities	A Classroom Level Only	B School/District-Wide	Suggested, but Optional Activity for A or B
The following are activities necessary or suggested for the successful implementation of the project.			

Academic Model Technology Program Adoption Survey

This survey is to be used for gathering the information needed to complete the "Adoption Status Report." The responses to the questions may be obtained by having the adopters complete the survey or by telephone or a combination of both.

Name of Agency:_____ Contact Person:_____

Address:_____ Phone:_____

1. Type of community where the adoption site is located:_____large city over 200,000; _____city of 50 to 100,000;_____suburban, 10 to 50,000;_____rural, 1000 to 10,000; _____rural under 1000.

2. Total number of staff participating in this adoption/adaption: certificated_____; non-certificated_____.

3. Total number of students **directly** participating in this adoption by grade level:

Grade	K	1	2	3	4	5	6	7	8	9	10	11	12	Adult	Total
Number															

4. Total number of classrooms served by this project:_____.

5. Total state funds expended for hardware: $_____; for software: $_____; for staff development: $_____.

6. Total district funds expended for hardware: $_____; for software: $_____; for staff development: $_____.

7. Status of this adoption or adaption:

Necessary materials obtained..... _____
Training Scheduled..... _____
Training completed ..... _____
Key elements implemented, minimum criteria met and adoption agreement signed ..... _____
Program has been expanded to new classrooms, schools, grade levels, etc. ..... _____
Adoption project has become a certified training or demonstration site ..... _____

8. Can the **key elements** of the AMTP project be easily identified in this adoption? Yes_____; Somewhat_____; No_____

9. Evaluation status for this adoption:

No information ..... _____
Evaluation is complete, but the evaluation plan and/or tests are **not** comparable to the original project. ..... _____
Evaluation plan and tests are the same or comparable ..... _____

Results are not yet available ..... _____
Results are available but not usable ..... _____
Results are available and usable ..... _____

10. Known funding sources for this adoption: AB 1470_____; General fund_____; Chapter I_____; Chapter II_____; SIP_____; Lottery_____; SB 1882_____.

11. Source of awareness about this project: awareness seminar_____; regional facilities_____; county office_____; professional conference_____; printed bulletin_____; word of mouth_____; other_____

Additional survey questions might be added by the director of the Academic Model Technology Program.

Academic Model Technology Schools (Level II MTS)

ESS

School-Based Educational Technology Grants
Adoption/Adaptation Agreement Planning Form

This form is designed to be used as a planning form and as part of the contract between the Level II project and the adoption site to facilitate the effective adoption or adaptation of the Level II project. Use this form to describe the specific activities to be implemented and resources to be provided by both the Level II dissemination project and the school/district adopting or adapting the project. Upon agreement between the representatives of each project regarding the activities, resoures, and budget allocations for this adoption/adaption of this Level II project all parties will sign the attached agreement form.

	Level II Project_____			School-Based Adoptor_____		
Component	Activities	Resources	Date(s)	Activities	Resources	Date(s)
Awareness						
Planning						
Staff Development						
Implementation						
Followup Assistance						
Evaluation						
Materials						

Adoption Adaption Agreement

TESS

Representatives of each project - the Academic Model Technology Schools Project and the School-Based Adoption site have reviewed all information needed to enter into an agreement that will facilitate the faithful and effective adoption or adaptation of Project_____. The Level II project agrees to provide the services and resources identified on the planning form. The School-Based Adoption site agrees to provide the support and resources for the staff to successfully adopt or adapt Project_____.

Added conditions of the agreement: _____

_____

_____

_____

Project Starting Date_____Project Termination Date_____

Level II Project Director_____

Level II Project Support Staff (if appropriate)_____

Adoption Site Project Director_____

Adoption Site Principal_____

Adoption Site Staff_____

_____

_____

Academic Model Technology Program On-Site Evaluation

District:_____ School(s):_____

Reviewer:_____ Title:_____ Date:__/__/__ Time:_____

Names of project staff available for visitation:_____

_____

A. Questions to ask project staff during the on-site visit:

1. How many months has it been since the program was implemented?_____
   Were there any delays? Yes_____ No_____ If yes, explain_____
   _____
2. Was all necessary training provided? Yes_____ No_____
   If no, explain:_____
3. Were all necessary materials available when needed? Yes_____ No_____
   If no, explain:_____
4. Was it possible to implement most of the key elements of the program?
   Yes_____ No_____ If no, explain:_____
5. Were there additional services that would have been helpful to facilitate implementation? No_____ Yes_____ If yes, explain:_____
   _____
6. Were there any deviations from your original proposed plan? No_____ Yes_____
   If yes, explain:_____
   _____
7. Were your expectations about the project generally met? Yes_____ No_____
   If no, explain:_____
   _____
8. On a scale of one through 10, with one as low and 10 as high, rate the following:
   Satisfaction of staff (teachers, aides, etc.) **directly** involved ..... _____
   Satisfaction of staff **indirectly** involved..... _____
   Perceived effectiveness in improving student achievement ..... _____
   Perceived effectiveness in improving student interest/attitude ..... _____
   Level of project implementation ..... _____

B. Observations made during the on-site visit:

1. I was able to observe:_____
   _____

2. From your observations, rate the following on a scale of 1-10:

Enthusiasm of the teachers	____	Adherence to minimum criteria	____
Enthusiasm of the Principal	____	Apparent need for the program	____
Student motivation	____	Creative adaptations of the program	____
Overall organization	____	Appropriateness as a visitation site	____
Level of curriculum alignment	____	Use of learning resources	____
Involvement of school planning groups	____		

3. Other observations:_____

4. Positive comments made by project staff:_____

5. Negative comments made by project staff:_____

7. Suggestions by project staff:_____

C. Conclusions and recommendations

1. Overall rating (on a scale of 1-10) by this observer of this project as a faithful and/or reasonable adoption of the model project:_____
2. Comments and recommendations:_____

Signed_____

Date___/___/___

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Portfolio Assessment Plan

Project Title:_____ Teacher(s):_____

School_____ Date:___/___/___

R & E Staff Person:_____ CIP Initiation Date:___/___/___

1. CIP Student Objective

2. CIP Intervention: Describe the instructional intervention that relates to the student work samples to be collected.

3. Describe the work sample or project that provides evidence of the degree to which the student is accomplishing the CIP student objective above:

Description	Scoring Criteria (in addition to MMTS criteria)

4. Work Sample Collection Schedule

	Periodic Sample Collection Dates								
Work Sample	1	2	3	4	5	6	7	8	9

Portfolio Scoring Criteria

Project Title:_____ Teacher(s):_____

School_____ Date:___/___/___

R & E Staff Person:_____ CIP Initiation Date:___/___/___

Area of Emphasis: 1. None or little 3. Moderate
2. Some 4. High

General Criteria	Student Impact							
	Planned				Observed			
	1	2	3	4	1	2	3	4
A. Proactive Behavioral Responses								
B. Technology Use								
C. General Curriculum Area								
D. Specific Academic Impact (refer to and select from the Curriculum Alignment Checklist)								